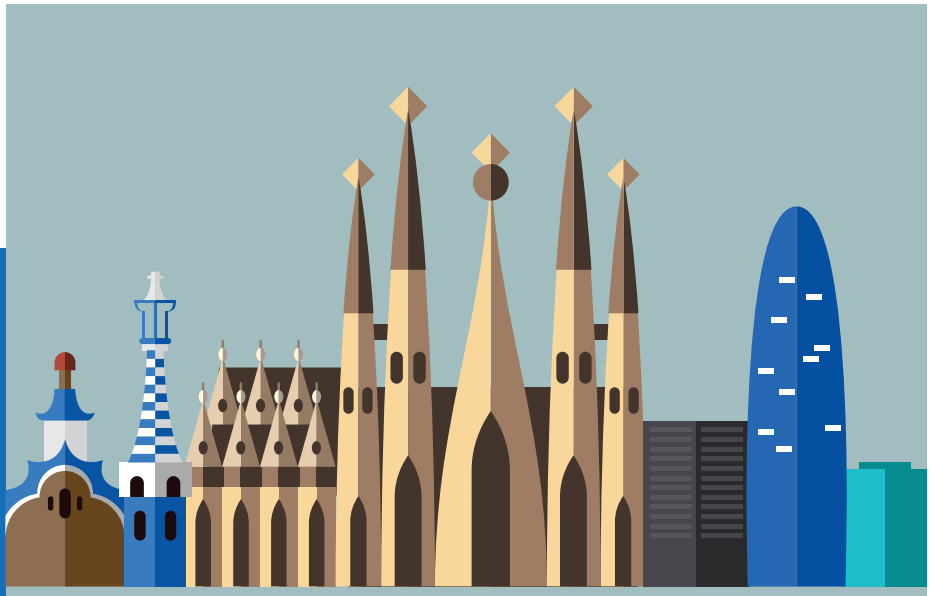
EFOMP

EUROPEAN FEDERATION OF ORGANISATIONS FOR MEDICAL PHYSICS



EANM 2025

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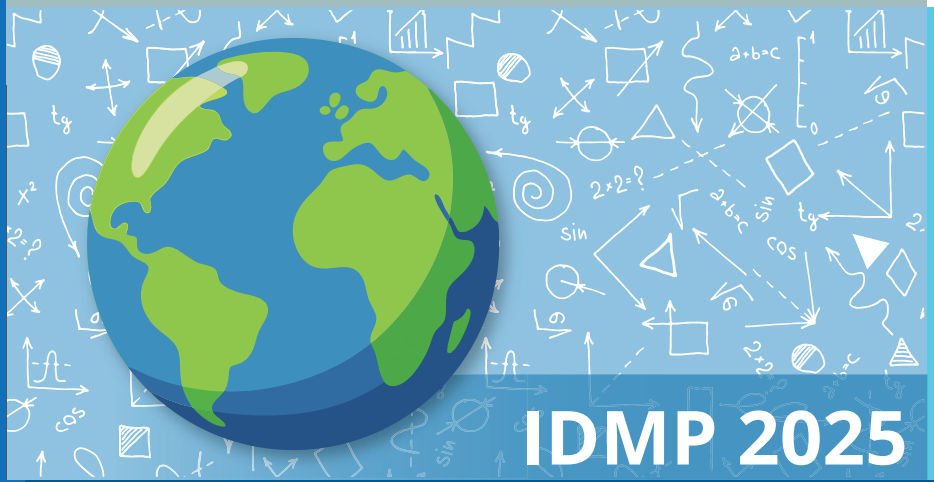

IDMP 2025

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Dear EMP News readers,

As 2025 comes to a close, it is a pleasure to welcome you to this winter edition of European Medical Physics News. Serving as Chair of the Communications and Publications Committee over the past two years has been an immense joy, and I am proud of what we have accomplished together. The committee has truly become a hub of creativity and connection for medical physicists across Europe.

Figure. Wishing You a Joyful Holiday Season.

Reflecting on an Exciting Autumn

This autumn has been full of vibrant activity across the European medical physics community. A major highlight was the Annual Congress of the European Association of Nuclear Medicine (EANM), the largest nuclear medicine congress in the world. Our editor, Rita Albergueiro, has captured the key moments in this issue, including the launch of two new journals and other EANM initiatives. I encourage you to read more about these developments and the congress highlights in the newsletter.

The SMRD2 Symposium, organized by the by the Radionuclide Internal Dosimetry (SIG_FRID) Special Interest Group, was another standout event. This bi-annual symposium has become a central meeting point for medical physicists working on dosimetry. Attendance was excellent, and in this issue you can explore insights from both organizers and participants, reflecting the energy and collaboration that define this gathering.

Earlier in 2025, the IUPESM World Congress took place in Adelaide, Australia. EFOMP was proudly represented by both Iuliana Toma-Dasu, Editor-in-Chief of the EJMP, and Jurgita Laurikaitiene Secretary General elect, member of our Communications and Publications Committee. Their coverage highlights the global exchange of knowledge and showcases the growing impact of European medical physics internationally.

Other highlights in this issue include reflections from the ESMPE School on Interventional Radiology and a preview of the ECMP 2026 Congress in Valencia, ensuring you can look forward to new learning and networking opportunities in the coming year.

Celebrating the International Day of Medical Physics

November brought the annual International Day of Medical Physics (IDMP), a special occasion for our community. This year's celebrations, focusing on "Medical Physics and Emerging Technologies: Shaping the Next Decade", were embraced across Europe, with reports from Italy, Portu-

gal, Spain, and Greece. It is inspiring to see how NMOs unite to celebrate the profession, demonstrating the shared dedication and connectivity of medical physicists across the continent.

Looking Back and Ahead

Reflecting on my term as Chair, I am reminded of the energy, commitment, and creativity that the Communications and Publications Committee brings to EFOMP. It has been a privilege to contribute, from coordinating newsletter issues to supporting initiatives such as the 2024 redesign of EMP News. The committee is, in my view, the heart of EFOMP—connecting thousands of professionals and sharing the stories, achievements, and creativity of our community.

As my term concludes, I am delighted to welcome Irene Polycarpou as the new Chair in January 2026. I look forward to seeing the fresh ideas, enthusiasm, and vision she will bring to the committee, and to learning about the exciting initiatives that lie ahead.

Wishing You a Joyful Holiday Season

With the year ending, I want to extend warm wishes to all readers for a peaceful and joyful holiday season. May it be filled with inspiration, reflection, and celebration of our shared profession. Thank you, EFOMP, for this incredible opportunity to contribute to a committee that connects, inspires, and showcases the best of European medical physics.

Onwards to new challenges and achievements in 2026!

Warm regards,

Sasha Ivashchenko Chair,
EFOMP Communications and Publications Committee

Sasha Ivashchenko, MPE at the Department of Nuclear Medicine and Molecular Imaging of the University Medical Center Groningen, chair of the CP committee 2024-2025.

EFOMP President's Report

Efi Koutsouveli highlights actions supporting EFOMP's Sustainability Roadmap as year ends

Another year as President of EFOMP is coming to an end, and I am grateful to each of our medical physics colleagues who has contributed to the work of EFOMP. Your engagement—whether through committees, working and special interest groups, educational activities, scientific events, or simply by supporting your National Member Organisation—strengthens our community. Every medical physicist, through their daily professional practice and guided by the spirit of ethos, synergy, and a philosophy of service, helps our community to grow, adapt, and respond to the evolving needs of healthcare, turning geopolitical uncertainties into opportunities for progress.

Looking back over this presidency's goals, our primary objective has been to harmonise and promote best practices for medical physics across Europe, including the development of standardised criteria, curricula, and qualification frameworks. The qualification framework for the medical physics profession is based on the principle of facilitating the mobility of clinically qualified professionals throughout Europe by establishing an agreed set of minimum criteria. A shortage of Medical Physics Experts, combined with uneven distribution across countries, poses a potential barrier to ensuring quality healthcare and to growth in the health sector. While mobility may not fully resolve this issue, it can at least help alleviate it.

Therefore, efforts have focused on regulating the profession using the Common Training Framework (CTF) mechanism—Article 49a of Directive 2005/36/EC, as amended by 2013/55/EU. According to four recent studies conducted by the European Commission (the SIMPLERAD study in 2024, the SAMIRA Study on the Implementation of Council Directive 2013/59/Euratom, the EU-Rest Report, and the transposition and implementation of the BSSD on the RPE/RPO/MPE Report in 2025), establishing a CTF for Medical Physics Experts (MPEs) would facilitate their mutual recognition in the EU-27 Member States. This is seen as instrumental in fostering professional mobility and the sharing of expertise. As agreed and approved at this year's Council meeting in Zagreb, Croatia, EFOMP will be advised and supported in preparing the application by a leading professional in EU and global health agendas as well as association leadership.

For this project to succeed, EFOMP, together with the National Member Organisations, will need to engage closely with EU institutions, national administrations, competent authorities in Member States, and other relevant decision-makers and stakeholders.

In line with this objective, we have focused this year on:

- Revising our curricula for Medical Physics Experts (MPEs) together with the professional societies of Nuclear Medicine (EANM) and Radiology (ESR)—a crucial step towards harmonising education and training across Europe.

- Organising the first "Leading Medical Physics to a Sustainable Future" school, which will run biennially with contributions from stakeholders and high-level healthcare policymakers, including European Commission commissioners. The

venue was the University Foundation (Université Stichting) in Brussels, located next to the European Commission, to strengthen our presence in European healthcare policy.

- Working in partnership with other health professional societies to be actively involved in the EU strategic agenda for medical ionising radiation applications (SAMIRA), for the benefit of Europe's patients and citizens, by increasing the quality and safety of ionising radiation use in medicine in a sustainable way.

- Collaborating with representatives of patient associations, academics, organisations of healthcare professionals, and the patient community to support the EU Health Programme (2021–2027) and to contribute to the proposed EU Multiannual Financial Framework (2028–2034), which addresses not only funding but also policies and strategies, ensuring its relevance for cancer care across all 27 EU Member States.

- Updating our Practical Arrangement with the International Atomic Energy Agency (IAEA) in the area of medical radiation physics, including activities related to the IAEA Rays of Hope initiative and support for regional Anchor Centres devoted to training, research, and innovation.

- Updating existing and establishing new Memoranda of Understanding with regional organisations, aiming to support joint educational initiatives and scientific collaboration, and to promote high-quality medical physics practices internationally through the EFOMP Congress, EFOMP School, EFOMP Journal, and the new educational platform e-LEMENT.

Throughout this journey, I have received full support—both formal and informal—from our National Member Organisations, professional societies, and each of you. As we approach the Christmas and New Year break, I hope you find time to rest and enjoy memorable moments with your family and friends.

Figure. EFOMP members sharing a few moments of well-deserved relaxation after marathon days at the EFOMP booth during the EANM25 Congress in Barcelona, Spain—still smiling and deeply committed to the work we do.

After the holidays, start preparing your abstract and planning your itinerary to participate in the European Congress of Medical Physics (#ECMP2026) in Valencia, Spain! Your involvement, however small or large, matters and plays a crucial role in shaping the future of our profession.

Efi Koutsouveli is a Medical Physicist, Radiation Protection Expert, and Laser Safety Officer at Hygeia Hospital, Athens, Greece (since 1993). Her work focuses on radiation oncology, hospital quality management, and oncology information systems. She is EFOMP President and received the 2019 IOMP-IDMP award for promoting medical physics to a broader audience.

EFOMP Secretary General Report

Reflections on another busy year of EFOMP activities.

EFOMP Governing Committee Updates

Congratulations to our two new committee secretaries who were recently appointed. Mikko Hakkinen, Finland joins our Projects Committee and Antonio Jreije joins our Communications and Publications Committee. Antonio is vice convenor of our Early Career Special Inerest Group so it is good to see him involved in our committees. We wish them both great success in their new roles. Our Autumn Officers Meeting and Annual General Council Meeting was held in Zagreb in September, and you can read more about that in the article written by Hrvoje Hršak.

Figure 1. EFOMP Officers Meeting in Zagreb, Croatia.

It was great to see so many of our delegates joining us in person and online. We were hosted by the Croatian Society for Medical Physics (CROMPA) who catered very well for all our needs from the excellent onsite facilities to the amazing Croatian food.

EFOMP SIGFRID 2nd Symposium on Molecular Radiotherapy Dosimetry: The future of Theragnostics

Congratulations to our Radionuclide Internal Dosimetry Special Interest Group which successfully organised the 2nd Symposium dedicated to Radionuclide Internal Dosimetry with the hosts Hellenic Association of Medical Physics in Athens. It was a pleasure for me to attend this event where over 225 participants and sponsors took part in the beautiful venue of the War Museum of Athens. The sun shone over the 3 days but there wasn't much time to explore the local attractions as the programme for the symposium was full with scientific sessions, invited talks, ePoster sessions, sponsor sessions and updates from sister societies. The Open Dosimetry Software session on Friday proved very popular with exhibitors given the opportunity to showcase their dosimetry software. Efi Koutsouveli chaired the round table session on Saturday on the topic of "Developing an agreed pathway to individual optimization of nuclear medicine therapy". The photo shown in figure 2 reminded me of the discussions which took place during the round table session. We must all work together, medical physicists, industry and patients to ensure optimisation of nuclear medicine therapies takes place.

Figure 2. Athens Klafthmonos Square, three intertwined figures (1988) by Vasilis Doropoulos.

EFOMP/EANM Nuclear Medicine Core Curriculum

The core curriculum review, led by Dimitris Visvikis, has now been completed and circulated to all NMOs for endorsement. The final version will be published on the EFOMP website by the end of the year. We extend our sincere thanks to all members of the working group for their dedication and hard work in updating the Core Curriculum for Medical Physics Experts in Nuclear Medicine.

International Day of Medical Physics 2025

Well done to all our National Member Organisations who organised events for this year's IDMP. The theme was "Medical Physics and Emerging Technologies: Shaping the Next Decade.

EFOMP was honoured to nominate Paola Russo (Italy). The award recognises excellence in Medical Physics with a particular view of promoting medical physics to a larger audience and highlighting the contributions medical physics make to patient care. Paolo has made significant contributions to the field of medical physics advocacy, notably serving as a past Chair of the EFOMP Communications and Publications Committee and as Editor-in-Chief of EFOMP - European Medical Physics News. He has consistently demonstrated a deep commitment to advancing high-quality scientific communication. He has promoted the development of specialised scientific literature, while also engaging with the broader public through targeted and effective outreach initiatives. While his achievements span a wide range of initiatives, his most impactful contribution has undoubtedly been his effective and visionary leadership of Physica Medica – The European Journal of Medical Physics, in his role as Editor-in-Chief. Under his leadership, the journal has undergone remarkable growth, reaching a level of quality and recognition comparable to that of the leading scientific journals in the field.

Figure 3. Paolo Russo, winner of IDMP award 2025.

European School of Medical Physics Experts

I am delighted to see three articles published in this edition of EMP News highlighting the great work of the ESMPE board over the last year. You can read all about students' experiences at two of the schools held this year which were dedicated to Proton Therapy (Prague, July 2025) and Interventional Radiology Practices (Zagreb, September 2025).

The next EFOMP school will take place in Porto, Portugal, in February 2026, focusing on Radiation Biology. You can read all about the school and the local area in the article written by the local organisers.

IAEA International Conference on Radiation Protection in Medicine: X-Ray Vision

In early December, I had the honour of representing EFOMP at the IAEA International Conference on Radiation Protection in Medicine: X-Ray Vision

in Vienna, Austria, where I also participated in the opening-day briefing session. The conference gathered leading radiation protection experts to discuss current trends and advances in medical radiation technologies and procedures, to identify future challenges and opportunities, to assess the impact of the decade-long Bonn Call for Action, and to help shape a strong strategy for the decade ahead.

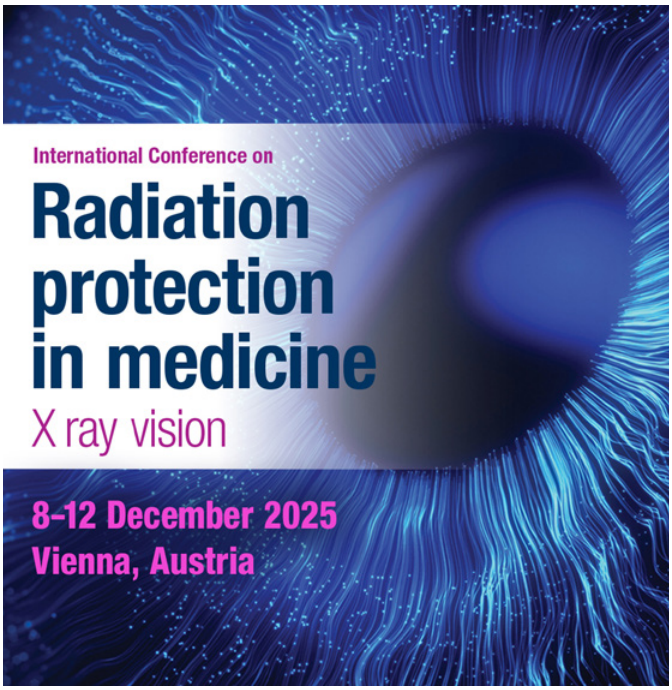


Figure 4. IAEA International Conference on Radiation Protection in Medicine: X-Ray Vision.

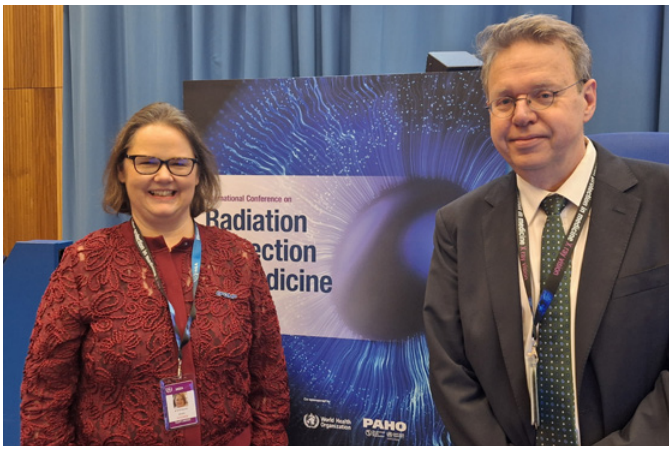


Figure 5: Brenda with Ola Holmberg, IAEA Scientific Secretary.

As 2025 draws to a close, I find myself reflecting on another productive year for the EFOMP Governing Committee, our various committees, and the many volunteers who contribute through our Special Interest Groups and the European School for Medical Physics Experts (ESMPE). It has been a privilege to work alongside such a dedicated team, and I look forward to 2026—my final year as EFOMP Secretary General. I wish you all a very Happy Christmas and look forward to seeing you in Valencia, Spain, for ECMP 2026.

Brenda Byrne is a Principal Physicist working in the Mater Misericordiae University Hospital, Dublin, Ireland. Her primary areas of interest are diagnostic radiology, nuclear medicine and radiation protection. She has been a registered radiation protection adviser (RPA) since April 2000 and is a recognised medical physics expert (MPE). Brenda is the current Secretary General of EFOMP and Past Chair of the EFOMP Professional Matters Committee.

6th ECMP 2026

European Congress of Medical Physics

23-26 September 2026 | Valencia | **Spain**

Advancing Healthcare through Physics:
Bridging Science and Patient Care for a Sustainable Future

KEY DATES

Registration and Abstract Submission Opens	Abstract Submission Closes	Early Bird Registration Closes
1st Dec. 2025	**16th March 2026**	**1st June 2026**

ecmp2026.efomp.org

Organize

EFOMP EUROPEAN FEDERATION OF ORGANISATIONS FOR MEDICAL PHYSICS

SEFM SOCIEDAD ESPAÑOLA DE FÍSICA MÉDICA

Welcome nation

POLSKIE TOWARZYSTWO FIZYKI MEDYCZNEJ PTFM

Physica Medica: Editor's Choice

For this winter issue of EMP News I selected the following 4 articles, recently published in Physica Medica (EJMP) which particularly attracted my attention.

J. Colnot, *et al*. Commissioning and performance evaluation of the new electron UHDR FLASH-KNiFE® system for FLASH radiation therapy.

Phys. Med. 2025; 135: 105014, doi.org/10.1016/j.ejmp.2025.105014.

The theme of this edition is FLASH. A recent study reports the successful validation of the FLASH-KNiFE system, a new mobile linear accelerator capable of delivering ultra-high dose rate (UHDR) electron beams. The team carefully tested its performance at 6 and 10 MeV, ensuring stability, accuracy, and reproducibility across a range of pulse settings. Results showed excellent consistency in output, energy, and beam profiles, with dose rates exceeding 275 Gy/s. Meeting key IEC and AAPM standards, FLASHKNiFE demonstrates the technical readiness required for preclinical research in FLASH radiotherapy. This work marks a significant step toward translating UHDR technology into experimental and, eventually, clinical use.

F. Schneider, *et al*. Rapid and reversible adaptation of a clinical linear accelerator for electron FLASH radiotherapy.

Phys. Med. 2025; 136: 105032, doi.org/10.1016/j.ejmp.2025.105032.

This very interesting study demonstrates how a standard clinical LINAC can be converted into a FLASH-capable system with minimal and fully reversible modifications. By integrating a simple pulse control unit and optimizing beam parameters, the authors enabled 10 MeV electron beams to reach ultra-high dose rates well above 200 Gy/s. The entire conversion process took less than 30 minutes, with the modified system delivering highly reproducible doses and maintaining strong dosimetric performance. This practical and efficient approach opens the door for many clinical centers to explore FLASH radiotherapy without extensive hardware changes, significantly lowering the barrier to experimental implementation.

A. De Gregorio, *et al*. In silico evaluation of the potential of very high energy electrons delivered in both conventional and FLASH regimes for the SBRT treatment of pancreatic cancer: A report of three case studies.

Phys. Med. 2025; 137: 105076, doi.org/10.1016/j.ejmp.2025.105076.

As pancreatic cancer incidence continues to rise, the clinical field is turning to novel technologies to enhance treatment precision and biological effectiveness. This study investigates the potential of Very High Energy Electrons (VHEE) in the 80–130 MeV range for treating pancreatic cancer, bringing up recent advances in compact accelerator design and compatibility with ultra-high dose rate (UHDR) delivery. Using simulated treatment plans, the authors compared VHEE performance under both conventional and FLASH conditions against standard VMAT plans for real patients. Results indicate that even at conventional dose rates, VHEE can achieve clinically robust dose distributions, while FLASH delivery could enable further dose escalation with improved tissue sparing. The findings position VHEE as a promising candidate for future external beam radiotherapy, combining physical precision with the potential biological advantages of FLASH.

M.K. Badawy, *et al*. Medical physicists at the forefront of multidisciplinary AI integration in healthcare.

Phys. Med. 2025; 135: 105007, doi.org/10.1016/j.ejmp.2025.105007.

The last paper I would like to bring to your attention is, in fact, a letter to the editor, but one that addresses a topic of growing importance for the entire community of medical physicists. The authors reflect on the transformative role of artificial intelligence (AI) in healthcare, highlighting its impact on diagnostics, treatment personalisation, and clinical decision-making. They also emphasize how medical physicists, with their strong foundation in technology and quantitative science, are uniquely positioned to ensure that AI is integrated safely and effectively into clinical workflows. Building on their long-standing contributions to radiation oncology, diagnostic radiology, and nuclear medicine, medical physicists remain central to bridging innovation and patient care, guiding the responsible adoption of AI in modern medicine.

Iuliana Toma-Dasu, Editor-in-Chief of Physics Medica – European Journal of Medical Physics.

EFOMP Annual General Council Meeting 2025 in Zagreb

Figure 1. EFOMP Governing Committee members and NMO delegates present on-site for CM at the School of Public Health "Andrija Štampar", University of Zagreb School of Medicine.

This year, the EFOMP Annual General Council Meeting (AGCM) was held in Zagreb on 19 and 20 September. The meeting took place at the School of Public Health "Andrija Štampar" (Figure 2), University of Zagreb School of Medicine (UZSM), in parallel with the EFOMP School "Interventional Radiology Practices".

During the EFOMP AGCM in Zagreb, 37 NMO delegates and 14 other attendees participated in a hybrid meeting, discussing EFOMP's activities for 2025 and plans for 2026 (Figure 1). In her report, EFOMP President Efi Koutsouveli presented the main activities of EFOMP over the last year, and the basic elements of the EFOMP Strategic Agenda 2024-2026, aiming to improve and harmonise the educational and professional status of European medical physicists. These are comprised of three components: Common Training Framework in medical physics across Europe, Automatic recognition by the EU of the MPE profession, and a Sustainability Roadmap for the medical physics profession in Europe.

Itembu Lannes, Chair of the Professional Matters Committee, presented an update on MPE Recognition Application activities in 2025. Within these activities, EFOMP has chosen to utilise the Common Training Framework (CTF), a standardised set of Knowledge, Skills, and Competences

(KSC) that can be achieved through Education and Training.

Figure 2. School of Public Health "Andrija Štampar", University of Zagreb School of Medicine.

Veronica Rossetti, Chair of the Education and Training Committee, gave an update on the competency-based core curricula and the proposal of a European comprehensive curriculum, which forms the basis of the Common Training Framework and Harmonisation in medical physics. For each European professional group working with the medical ionising radiation applications, EU-REST report provides information on the Status and Recommendations on workforce availability and education and training needs, indicating that harmonisation of training across all 27 EU Member States (in terms of duration, curriculum, and certification of successful completion) is desirable, and should be supported.

In the Projects updates, Dimitris Visvikis, Chair of the Projects Committee, introduced the main project activities over the past year, with a focus on those related to the MPE Recognition Application. The Projects committee strategy has three main elements: project involvement as an EFOMP mainstream activity, EFOMP's involvement in EU projects as a means to shape the future of the medical physics profession, and promotion of EFOMP as a project partner. Within this strategy, EFOMP aims to participate in various project activities: Service contracts (DG ENER, DG SANTE, HADEA), Research consortia (EU4Health, Euratom, EiCPathfinder, IHI), Metrology projects (EURAMET), Marie Skłodowska Curie Doctoral Networks (MSC), Erasmus+ and ENEN+ Educational network.

Eeva Boman, Chair of the Science Committee, provided an update on EFOMP Working Groups (WGs). Besides the current EFOMP WGs on VMAT-Breast and Policy Statement 21, there are important EFOMP-driven active joint WGs in collaboration with AAPM, EANM, ESTRO, ESR, SNMMI and AANMS. Clearly, the number of joint WGs is increasing as EFOMP promotes collaboration on topics of mutual interest with other professional organisations in Europe and beyond.

Antonio Lopez Medina, chair of EU & International Matters Committee and Irene Polycarpou, vice chair of Communications and Publications Committee, presented an update on how EFOMP is Connecting Worldwide and Communicating Effectively. Existing and new Memoranda of Understanding (MOUs) and Agreements with ACPSEM, ALFIM, EANM, ESR, and ICTP-IAEA were presented, along with practical arrangements, such as the one signed with IAEA , highlighting EFOMP's support for the Rays of Hope and regional Anchor Centres.

Irene Polycarpou informed about the outreach events and plans to upgrade the EFOMP website and Digital Tools for SIGs, webinars and e-LEMENT.

EFOMP Secretary Brenda Byrne provided an update on EFOMP institutional matters, informing the Council about the results of recent elections and upcoming calls for the secretary of the scientific committee, vice chair of projects, and internet manager vacancies. An update on all EFOMP SIG activities was given as well.

Finally, Dimitris Visvikis collected the EFOMP's IPEM National Registration Scheme certificate on behalf of IPEM from Itembu Lannes and Efi Koutsouveli (Figure 3). Congratulations!

Figure 3. Dimitris Visvikis collecting the EFOMP's IPEM (UK) National Registration Scheme certificate on behalf of IPEM from Itembu Lannes and Efi Koutsouveli.

Hrvoje Hrsak is the CROMPA President, medical physicist at the Department of Medical Physics, University Hospital Centre Zagreb, and Assistant Professor at the Department of Physics, Biophysics and Medical Physics, School of Medicine, University of Zagreb. He serves as the EFOMP Professional Matters Committee Secretary. His main interests include radiosurgery, small-beam dosimetry, and professional matters in medical physics.

Do-It-Yourself Fair at ECMP2026 — Bring Your Ideas to Life!

The Do-It-Yourself (DIY) Fair made its debut in 2022 at the European Congress of Medical Physics (ECMP) in Dublin, created to showcase the creativity and ingenuity that medical physicists bring to their clinical and research environments. Our community has a long-standing tradition of crafting clever, practical, and often brilliant DIY solutions — and the Fair was designed to celebrate exactly that.

Following the success of the inaugural event, the second DIY Fair took place at ECMP 2024 in Munich, featuring an exciting range of contributions, including software tools, scripts, custom 3D-printed designs, devices, phantoms, and an impressive collection of inventive gadgets.

These events have clearly demonstrated a strong need within the medical physics community for sharing, discussing, and disseminating self-developed solutions.

And now... it's your turn!

ECMP2026 in Valencia will once again host the DIY Fair — and we warmly invite all colleagues with innovative DIY solutions, whether for clinical practice, research, or education, to take part and showcase their work.

Want to learn more? You can read all about the first edition of the DIY Fair in the EFOMP Journal Physica Medica.

DIY Fair at ECMP2026: We're ready for your ideas!

Abstract submission opens on 1st December.

Find all details on the ECMP2026 website
We look forward to seeing you in Valencia!

The DIY Fair Organising Committee

Eeva Boman, EFOMP Scientific Committee Chair

Veronica Rossetti, EFOMP Education & Training Committee Chair

Jonas Andersson, Sweden Science, Committee
Miika Nieminen, Finland,ET Committee
Gabor Stelczer, Hungary, ET Committee
Thiago Lima, Switzerland, ET Committee

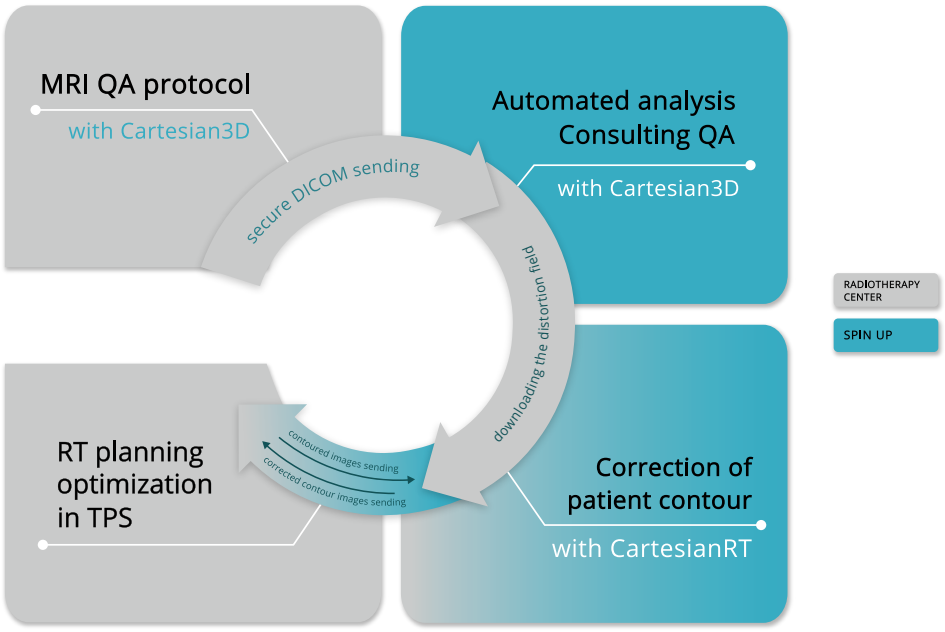
Cartesian

MORE INFORMATION ABOUT OUR SOLUTION?

spin-up.fr

ANALYSIS OF GEOMETRIC DISTORTIONS IN MRI

ACQUISITION AND ANALYSIS OF CARTESIAN3D PHANTOM IMAGES



CORRECTION OF DISTORTIONS ON PATIENT RT CONTOURS

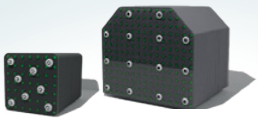
SOLUTION FOR CHARACTERIZATION OF
MRI MACHINE-SPECIFIC DISTORTIONS
IN RADIOTHERAPY

CARTESIANQA: A TURNKEY SOLUTION

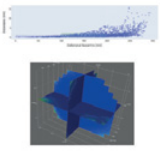
- **IN ACCORDANCE WITH AAPM RECOMMENDATIONS (TG 284)**
- **LONG-TERM MRI PERFORMANCE MONITORING**
- **CLINICAL SEQUENCE OPTIMIZATION**

THIS SET INCLUDES

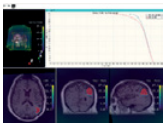
→ **CARTESIAN3D PHANTOMS**
HEAD + BODY



→ **CARTESIANQA**
WEBAPP SOLUTION FOR QA FOLLOW-UP BASED ON AAPM RECOMMENDATIONS



→ **CARTESIANRT MODULE**
DISTORTION FIELD OVERLAY PATIENTS SPECIFIC EVALUATION OF RT STRUCT ERROR WITH DICE HAUSDORFF AND DVH CRITERIA



FIND MORE DETAILS & ILLUSTRATIONS IN THE SAME MAGAZINE ARTICLE BY SPIN UP:
«CARTESIAN: A TURNKEY SOLUTION FOR MONITORING AND ASSESSING THE IMPACT OF GEOMETRIC DISTORSIONS IN MRI».

Alara group
Smarter, safer.

Advancing Adaptive Radiotherapy at Amsterdam UMC: Clinical and Operational Perspectives on the move to Ethos 2.0

At Amsterdam UMC, Jorrit Visser PhD and the clinical team have accumulated over five years of hands-on experience with Ethos therapy, recently transitioning to Ethos 2.0. Their journey provides valuable insights for clinical teams considering or implementing online adaptive workflows.

Since the introduction of Ethos, Amsterdam UMC has steadily broadened its adaptive treatment portfolio. Initially focusing on rectal cancer, the team quickly expanded to include bladder, cervical, breast, and esophageal cancers, as well as implementing a fast metastases workflow for palliative care. Plans are underway to add head and neck sites and extend the fast metastases protocol to fractionated treatments.

The Leap to IOE2: Simplicity and Quality

Transitioning from using version 1.1 of Ethos's Intelligent optimization engine (IOE) to IOE2 marked a significant improvement in the team's workflow and treatment quality. "The IEO2 optimizer always tries to reduce the dose in the organs at risk further, even when the clinical goal is already achieved," Jorrit notes. "In Ethos version 1.1, we introduced some helper structures and additional goals to steer the IOE, but now with Ethos 2.0, the IOE further reduces the dose to the organs at risk beyond the clinical goal that you set automatically."

Figure. Dr Jorrit Visser, PhD, Medical Physics Expert at the Radiotherapy Department, Amsterdam UMC, The Netherlands, specialising in treatment planning and online adaptive radiotherapy.

"The IOE2 is stricter on dose homogeneity and prioritizes clinical goals more effectively," Jorrit explains. These enhancements have allowed the team to simplify their templates and reduce the need for extra planning structures, making the entire process more efficient and robust.

The integration of RapidPlan in combination with IOE2 has also been transformative for us. "If we add a RapidPlan DVH estimation, we can just load a template and the whole treatment planning process is completely automated. When using RapidPlan for each treatment fraction, the clinical goals are really tailored to the specific patient anatomy changes seen on the CBCT each day. RapidPlan creates a new DVH estimation each

day based on this and the goals are adjusted during optimization of the adapted plan. That's a really great improvement."

Insights from clinical practice

With Ethos, the team discovered that automation could be a game-changer, with clear operational benefits. "With the addition of RapidPlan, anyone can now generate a reference plan by loading a template,". Additionally, by creating robust reference plans, Amsterdam UMC empowers radiation therapists (RTTs) to evaluate the treatment plans and approve treatments directly at the machine. "Now, RTTs themselves can create reference plans and approve adapted plans at the machine for certain sites. Our goal is to extend this to all adaptive treatments."

For departments new to adaptive radiotherapy, Jorrit recommends starting with smaller PTV margins from day 1 because the main advantage of adaptive is, of course, the ability to use smaller PTV margins safely. So, to fully leverage the benefits of adaptive RT, clinical teams should really do this straight away.

He advises keeping templates simple, minimizing helper structures, and focusing on workflow efficiency rather than striving for the absolute best reference plan quality. "The adaptive process should be viewed holistically, integrating planning and delivery as a unified workflow. Fast, simple protocols are essential to counteract intrafraction anatomical changes, particularly bladder filling in pelvic treatments."

In Summary

Amsterdam UMC's story is one of embracing change, learning from experience, and sharing insights with the wider community. Their journey with Ethos 2.0 shows that adaptive radiotherapy, when approached with the right tools and mindset, can deliver high-quality care and operational excellence.

Rebecca Lynn, Senior Product Marketing Manager for Ethos therapy at Varian (Siemens Healthineers), combines 18 years as an RTT with 7 years at Varian to drive AI-driven adaptive radiotherapy marketing and foster collaboration across the EMEA Ethos community.

Qaelum

Defining CT Dose Optimization Targets in Clinical Practice

Ensuring patient safety and consistent imaging quality remains a core priority in radiology departments. The International Atomic Energy Agency (IAEA) outlines clear goals for patient dose monitoring in its Safety Report Series 112 [1], emphasising optimised radiation protection, imaging safety and accuracy for individual patients, justification and appropriateness, and awareness of collective dose from sources of medical exposure, among others. To support these aims, a study was carried out at the Ortenau-Klinikum Offenburg-Kehl in Offenburg, Germany, focusing on the implementation of the IAEA targets in clinical practice.

A state-of-the-art dose management system (DOSE, Qaelum, Belgium) was deployed across the five clinic locations. Variability was first assessed across two CT scanners (Somatom Definition AS+, Siemens, Germany) and two high-volume protocols: head with contrast (n=4617) and dual-phase abdomen (n=1709), performed throughout 2024. Radiographers documented reasons for increased dose values according to StrlSchV Anlage 14 (§108) [2] using the "Activity stream" feature of DOSE (Figure 1), which were then reviewed by radiologists to ensure transparent and consistent justification.

Comparisons revealed strong alignment between scanners: standard study composition and scan settings were identical, while median CTDIvol and scan length differed by only 1% and 3%, respectively. However, a notable exception emerged during the 4 a.m. shift on one scanner, where CTDIvol exceeded the average by 20% (Figure 2). Contributing factors included use of higher kVp, patient body habitus, and suboptimal arm positioning. The dose management system enabled a detailed review of both low-dose and high-dose outliers using its outlier analysis tool. Most head studies falling below the 2nd percentile involved female patients, likely reflecting smaller head size, while abdomen studies often contained repeated localisers, suggesting potential challenges in positioning or protocol selection. At the upper end, studies exceeding the 98th percentile were linked to additional perfusion imaging (head) or large patient size (abdomen).

Using interquartile-range-based thresholds, 75 mild and 11 extreme outliers were identified within abdomen examinations. These were most often associated with high BMI, inappropriate kVp use, or scanning with arms down, reinforcing the importance of proper technique and protocol adherence.

Typical effective doses ranged from 1.9 to 27 mSv per study, though the system also highlighted examinations exceeding 100 mSv, particularly in abdomen with contrast and thoracic oncology imaging. Identifying and reviewing such cases is fundamental for strengthening justification workflows.

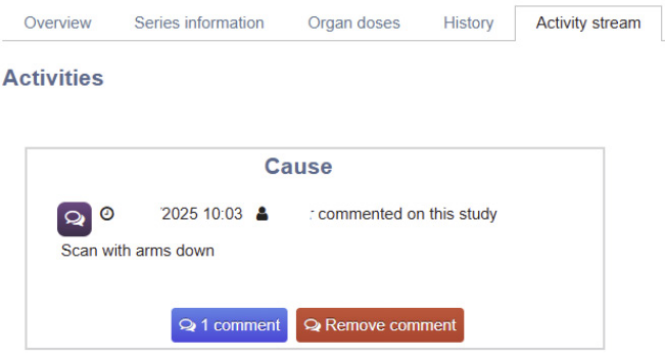


Figure 1. Activity stream feature of DOSE, allowing radiographers to indicate the cause of high-dose examinations, with further options to document the Action and Justification, when necessary.

This project underscored several important opportunities for further optimisation:

- Reducing repeated abdomen localisers through improved patient positioning.
- Reviewing image quality in low-dose outliers to ensure adequacy.
- Validating correct use of scan parameters across shifts.
- Enhancing data completeness, including operator initials and slice data.

This study was presented at the Annual Meeting of the German Society for Medical Physics (DGMP) in September 2025 in Berlin [3].

If you want to know more about DOSE by Qaelum, visit qaelum.com/solutions/dose or send an email to info@qaelum.com.

References:

[1] INTERNATIONAL ATOMIC ENERGY AGENCY, Patient Radiation Exposure Monitoring in Medical Imaging, Safety Reports Series No. 112, IAEA, Vienna (2023).

[2] DEUTSCHE BUNDESREGIERUNG, Verordnung zum Schutz vor Schäden durch ionisierende Strahlung (Strahlenschutzverordnung – StrlSchV), insbesondere § 108 i. V. m. Anlage 14, Bundesgesetzblatt Teil I Nr. 2034, Bonn (2018).

[3] Romanyukha A, et al. Determining CT dose optimization targets according to IAEA recommendations. Annual Meeting of the German Society for Medical Physics, DGMP, 24 – 27 September 2025, Berlin, Germany.

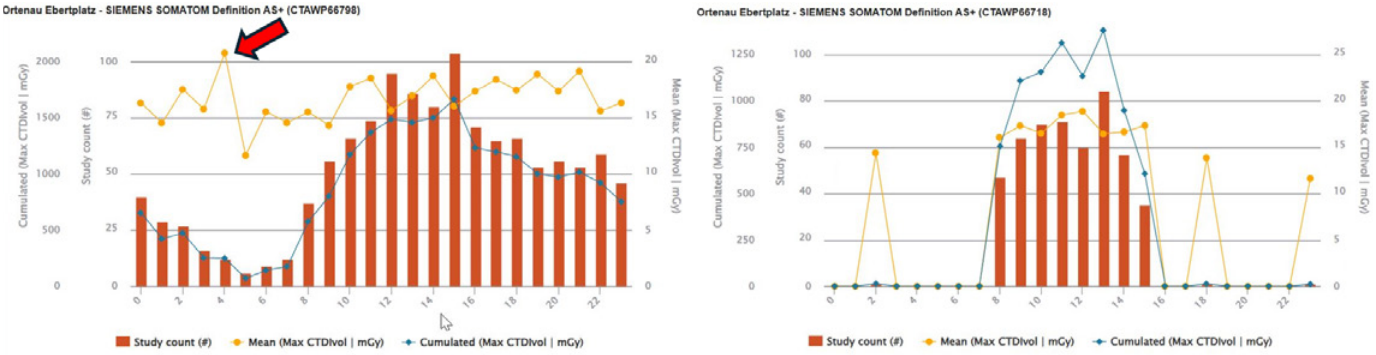


Figure 2. Hourly trend in mean and cumulative CTDIvol for the abdomen protocol on scanner 1 (left) and 2 (right). A 20% higher mean CTDIvol is observed on scanner 1 during the 4 a.m. shift (red arrow).

Anna Romanyukha received her Ph.D. degree in medical physics from the Centre of Medical Radiation Physics (UOW, Australia) and her M.Sc. degree in health physics from Georgetown University (Washington DC, USA). She worked as a post baccalaureate and pre doctoral fellow at the National Cancer Institute (NIH, Washington DC) on various projects including radiation dose estimation from diagnostic exposures. She now works in Qaelum NV, focusing on advanced software tools in patient radiation dose management and quality.

Niki Fitousi, PhD, is a certified medical physicist with professional experience in all fields of Medical Physics (Radiation Therapy, Diagnostic Radiology, Nuclear Medicine, Radiation Protection). She is currently the Head of Research and Applications in Qaelum, focusing mostly in the fields of radiation dose management, quality and efficiency in medical imaging. She is also a member of the Medical Physics World Board of the International Organization for Medical Physics, as well as other Medical Physics organizations.

Ernest Okonkwo, PhD, is a certified medical physicist with DGMP recognition in radiation therapy (Fachanerkennung in der Strahlentherapie). He is currently the Head Medical Physicist for Radiation Oncology and Radiology at Ortenau Klinikum Offenburg-Kehl. He is also a member of the DGMP, Mephida e.V., and the Nigeria Clinical Training and Certification Board of the Nigerian Association of Medical Physicists.

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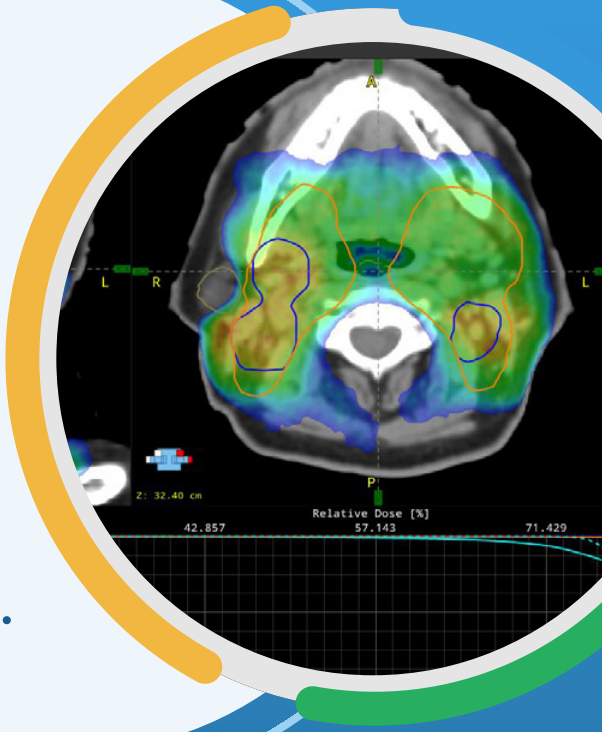

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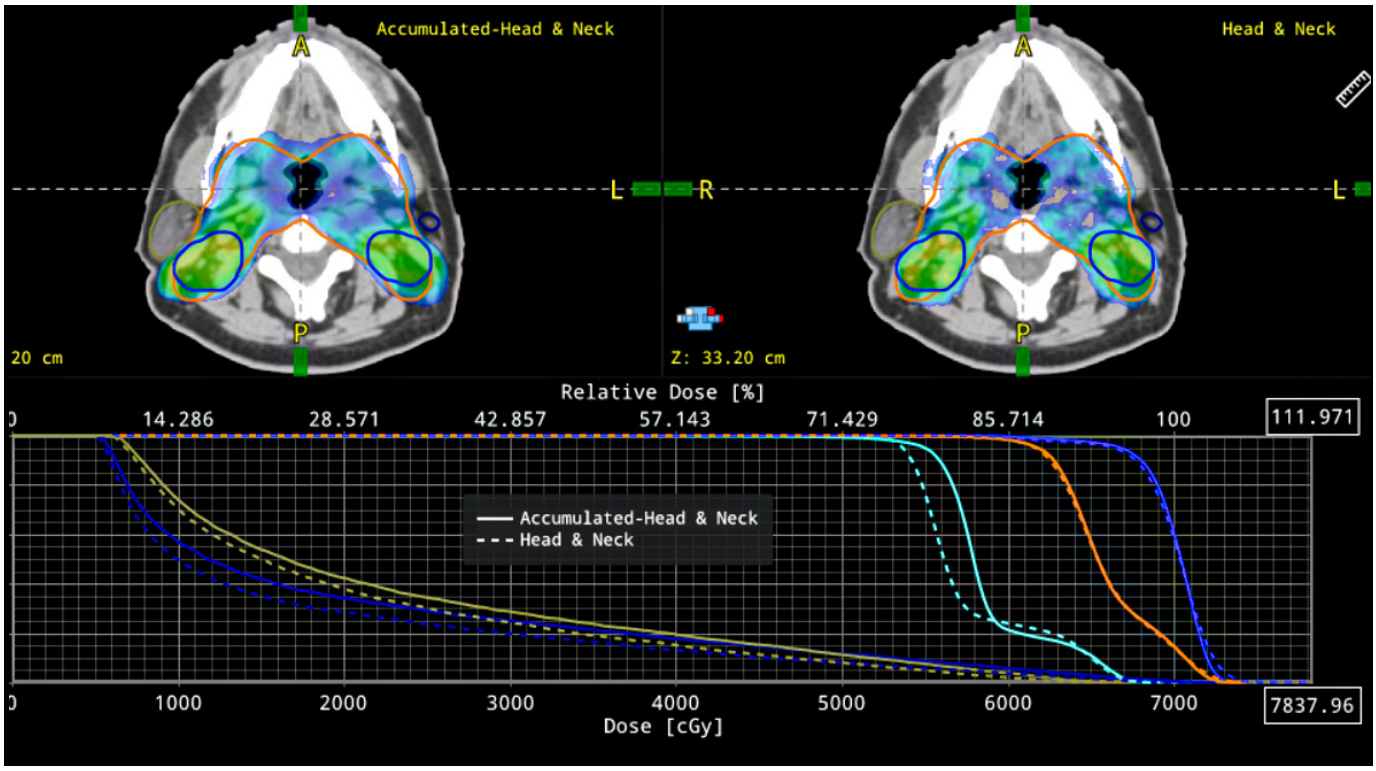


Figure 1. Cumulative dose from individual treatment fractions can be compared directly against planned values to provide insights on treatment progression, informing smart decisions for offline adaptation.

Patient plan review is a cornerstone of quality assurance in radiation oncology. **ChartCheck** has long simplified this process for weekly physics checks, providing a centralized, automated platform that delivers efficient, data-driven treatment evaluation.

With the recent addition of our new **Offline Adaptive Assessment** tools, innovations within ChartCheck take another leap forward. Departments now have access to a more comprehensive view of plan performance, gaining deeper insight into each individual fraction and enabling more informed, confident clinical decisions.

The Challenge of Keeping Plans on Track

Even the best treatment plan is only as good as a patient's anatomical match on any given day. Over the course of therapy, trends such as patient weight loss, mask fit, or tumor regression can alter dose distribution and compromise the original plan's accuracy. Determining if a replan is appropriate remains largely subjective, often limited to visual review of daily CBCTs to identify gross deviations.

Establishing a more quantitative picture of plan fit requires more rigor: exporting image sets, generating deformed structures, recalculating dose dis-

tributions, and analysing new DVHs. This process demands time and expertise, but still heavily depends on data quality and workflow consistency.

Introducing ChartCheck Adaptive™

Radformation's answer is **ChartCheck Adaptive**, an addition to the existing ChartCheck platform designed to make automated adaptive radiotherapy assessment a reality. ChartCheck Adaptive evaluates treatment delivery on each fraction, using pre-treatment imaging and daily log files to calculate how well the delivered dose aligns with the original plan.

The zero-click process operates in the background without interrupting clinical throughput. The system leverages data acquired during standard treatment, eliminating the need for additional simulations or manual setup. The result is a comprehensive picture of plan progression for each treatment fraction as well as cumulative dose assessment.

Putting the Pieces Together

This new adaptive assessment functionality leverages existing Radformation solutions, working behind the scenes within the ChartCheck platform to provide a crisp dosimetric assessment of each treatment fraction delivery.

AutoContour

The first step of the process uses AutoContour's deformable image registration algorithm to adapt existing target and OAR contours to daily cone-beam CT (CBCT) images. As CBCTs can vary in quality, AutoContour generates a synthetic CT for Hounsfield Unit mapping and accurate calculation results.

RadMonteCarlo

Using the original treatment plan and optional daily machine log files, RadMonteCarlo performs

Figure 2. ChartCheck Adaptive intelligently leverages individual solutions already trusted by thousands of clinicians worldwide to provide an efficient offline adaptive assessment workflow.

a full Monte Carlo recalculation of dose on the synthetic CT, providing a highly accurate dose distribution to assess against benchmark values.

ClearCheck

To relate the recalculated dose to clinical goals, dose constraint templates are automatically applied to evaluate key metrics—DVH curves, target coverage, OAR constraints, and volume changes—delivering a complete quantitative assessment without additional user input.

ChartCheck Adaptive

Originally a platform for efficient, high-quality physics weekly review, ChartCheck now brings key functionality from these existing solutions to create an offline adaptive assessment workflow that delivers dosimetric insights for key decision making during a course of treatment.

Together, these components enable departments to track the true delivered dose throughout the treatment course and to identify when anatomical or positional changes begin to impact plan quality.

A Data-Driven Step Forward in Patient Care

The offline adaptive tools within ChartCheck represent a significant step forward in connecting daily clinical practice with the promise of adaptive radiotherapy. ChartCheck Adaptive™ transforms adaptive assessment by providing key dosimetric insights that **enable data-driven decisions** on whether replanning is necessary to ensure every patient receives the most accurate, effective treatment possible.

To get more information about our approach to offline adaptive assessment with ChartCheck, schedule a demo to learn more.

ChartCheck 1.6 is CE Marked and available now where CE Mark is recognised. Pending USFDA 510(k) Clearance.

Tyler Blackwell, MS, DABR, FAAPM is a medical physicist at Radformation focused on a range of clinical collaborations from marketing to research. Before joining Radformation, he spent a decade working as a clinical physicist. He is active on several committees for the American Association of Physicists in Medicine and volunteers for the American Board of Radiology

Epiqa: EPID dosimetry for pre-treatment and in-vivo consistency QA

Epiqa software in the IBA Dosimetry portfolio
Epiqa is a pre-treatment Patient/Plan Specific QA (PSQA) software based on Electronic Portal Imaging Device (EPID) data and was recently added to the IBA Dosimetry portfolio for the European market.

Modern EPIDs are amorphous-silicon detectors available on all commercial linear accelerators. Their integrated images can be used for dosimetric verification in PSQA. Epiqa converts EPID images into absorbed dose in water at the depth of dmax, at the isocentre, comparing the resulting map with the corresponding dose map calculated in the treatment planning system (TPS). Primarily, Epiqa performs TPS vs. EPID comparison for pre-treatment QA. The EPID vs. EPID module instead compares EPID doses from different sessions, enabling an in-vivo constant QA process.

A clinical example
A prostate cancer patient was treated post-prostatectomy on a Varian Halcyon® unit with 50 Gy in 25 fractions, followed by a 20 Gy boost to the tumour bed. Halcyon® is an O-ring linac equipped with an in-beam EPID opposite the 6 MV FFF source.

A three-arc VMAT plan was prepared and delivered with kV-CBCT image guidance (Varian HyperSight). The pre-treatment PSQA based on EPID and Epiqa software resulted in a gamma agreement index (GAI, defined as the percentage of the points passing the gamma criteria, here set to 3%/2mm, no low dose cutoff) in the field bounding box of 99.70%, 99.99%, and 99.99% for the three arcs, respectively. The same figures in the CIAO (Completely Irradiated Area Outline, i.e. the field area including the irradiated area of all the control points) were 99.48%, 99.98%, and 99.98% (Figure 2).

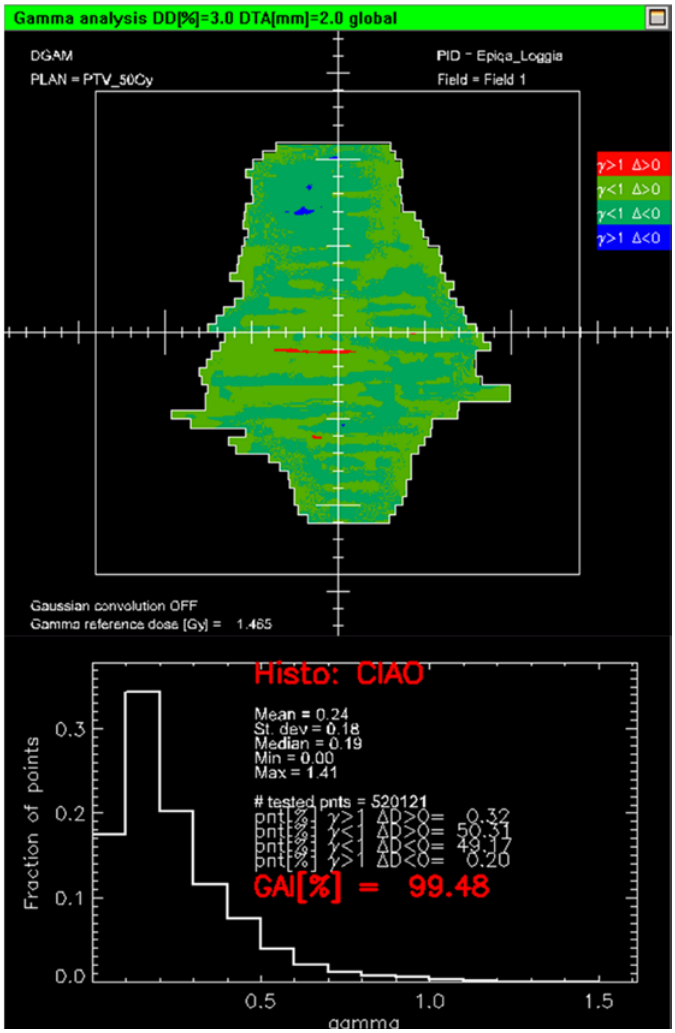


Figure 1 – Epiqa pre-treatment PSQA of arc 1. Gamma criteria 3%/2mm, no cutoff, analysis inside CIAO.

An EPID image per arc was acquired at every fraction. The "EPID vs. EPID" in-vivo constancy analysis used the first fraction as reference, with fixed gamma criteria (3%/2 mm, no cutoff, inside CIAO) consistent with pre-treatment QA. Figure 3 shows the comparison between session 10 and session 1 for arc 1. The gamma analysis across all sessions and fields (Figure 4) yielded mean ± SD GAI values of 98.5 ± 2.1%, 97.8 ± 2.2%, and 98.5 ± 1.7% for the three arcs, respectively.

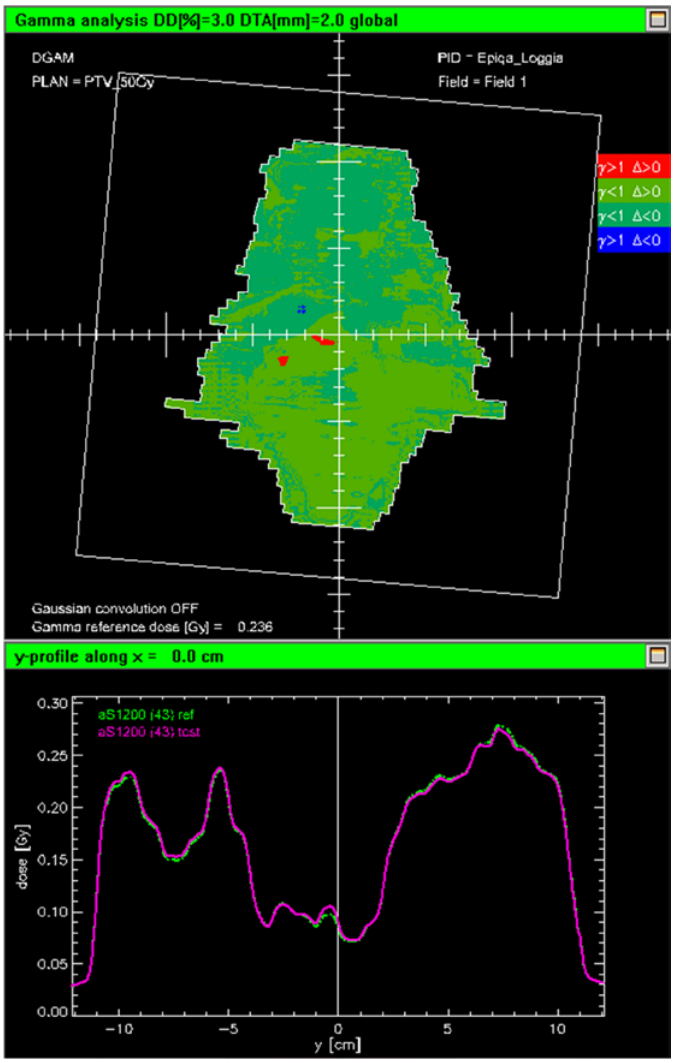


Figure 2 – Epiqa in-vivo constancy analysis of arc 1, session 10. On left: test session 25. On right: reference session 1.

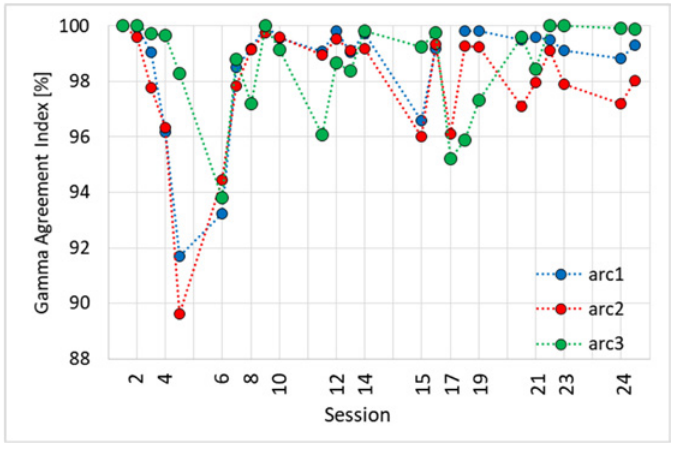


Figure 3.Gamma agreement index (criteria 3%/2mm, inside CIAO) from the analysis between the first and the subsequent sessions for the 3 arcs.

The fifth and sixth sessions presented a GAI sensibly lower than the other sessions relative to the first fraction. The CBCT of fraction 6 showed indeed an important air pocket in the bowels. The delivered dose was estimated for that session by calculating the plan on the CBCT. The 3D gamma agreement between the first and the fifth calculated sessions (3%/2mm, 10% cutoff) was 94.3%, lower than the average over the whole treatment of 96.3±1.1 %.

Figure 5 shows the calculation on the session 6 CBCT (where the air pocket is visible), and the 3D gamma between the two calculations. Figure 6 shows the gamma evaluation and the percentage dose difference from Epiqa for the 3 arcs of the same session 6. The CBCT and the calculations confirmed the decreased gamma obtained by Epiqa in-vivo constancy analysis.

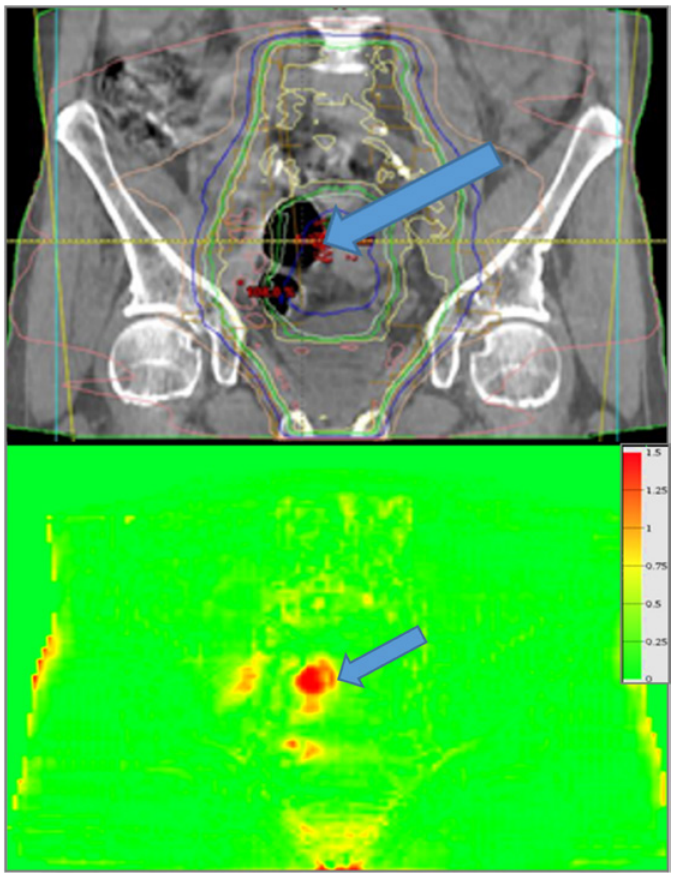


Figure 4. On top: the CBCT of session 6 with the recalculated daily dose distribution. On bottom: 3D gamma evaluation on the coronal view through the isocentre. Arrows highlight the correspondence of gamma fails, and gas pockets in the abdomen.

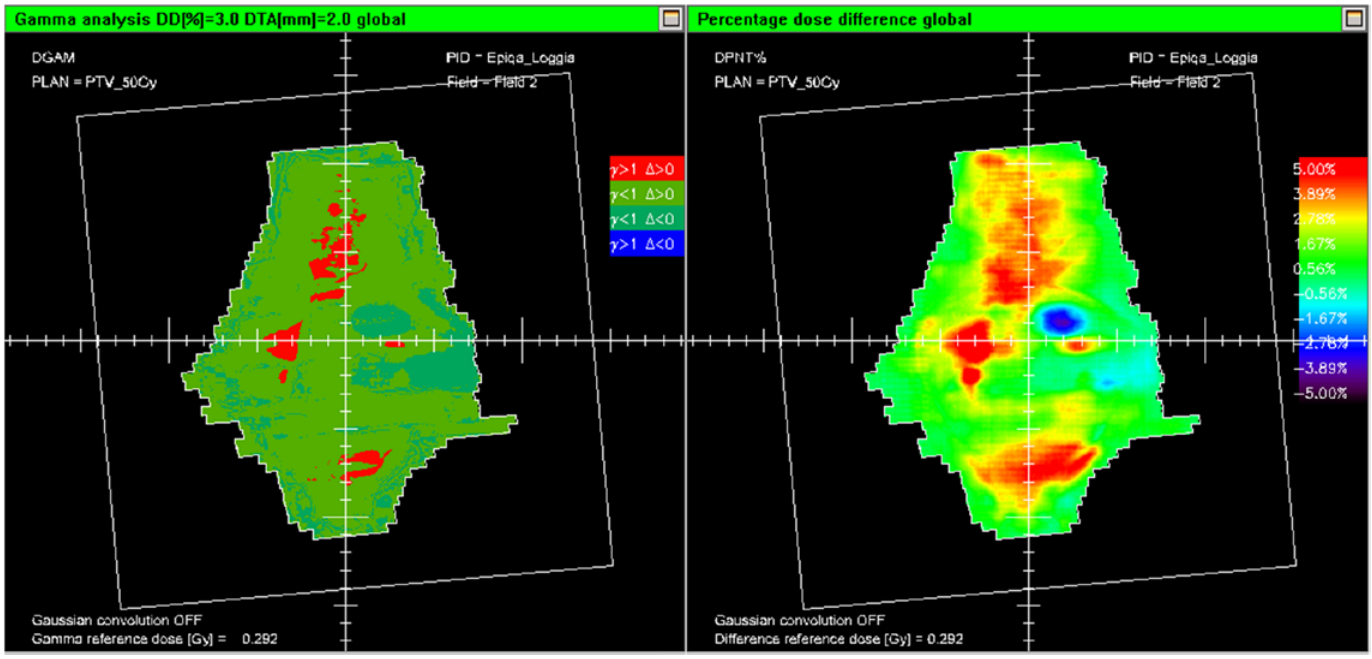


Figure 5. On the left: Epiqa gamma evaluation of session 6 for one arc. On the right: Epiqa percentage dose difference of the same (color range -5%, +5%)

Conclusion

Epiqa proved to be a promising tool for in-vivo constancy during patient treatment. It could enable detection of anatomical artifacts even when gamma values remain within tolerance, supporting more detailed, site-specific QA analyses. This could lead to more detailed studies, site by site, of the quality of the treatments. The choice of the best gamma criteria for in-vivo constancy should be analysed. The use of in-vivo constancy is of particular interest on the Halcyon® unit, where the EPID images are automatically acquired at each treated field, allowing a straightforward quality assurance of the whole patient treatment.

Authors in next page ▸

Arianna Giuliacci, Nuclear engineer, head of the Clinical Application team at IBA Dosimetry. More than 15 years of experience in the RT industry as R&D physicist, customer manager, and providing clinical implementation of IBA products.

Marco Fusella is a clinical medical physicist specializing in radiation oncology at Policlinico Abano Terme, Italy. His main interests include online-offline adaptive radiotherapy, MRI-only workflows and full automation in RT. He is actively involved in national and international expert boards and collaborative studies on the safe use of AI in radiotherapy, contributing to standardization initiatives and multicenter research within ESTRO, EFOMP and AIFM.

Antonella Fogliata is a medical physicist with about 35 years of experience in radiotherapy, having spent most of her career at Bellinzona Hospital in Switzerland. In the past decade, she has collaborated closely with Humanitas Hospital in Italy. She is active in photon dosimetry, treatment planning for intensity modulation optimization and calculation algorithms, and clinical and R&D implementation technologies. She has also lectured extensively on radiotherapy and dosimetry courses.

Fifteen Years of Scientific Dialogue: QADS as a Forum for Advancing Radiotherapy QA

Quality assurance (QA) in radiation oncology has never been more essential—or more complex. Clinical workflows are rapidly evolving, shaped by adaptive radiotherapy, automation, stereotactic treatments, and the growing integration of diagnostic and therapeutic nuclear medicine. At the same time, patient-specific considerations, regulatory expectations, and multi-modality planning introduce new layers of uncertainty that physicists must continually address. These pressures are reshaping QA from a procedural checkpoint into a dynamic, data-driven discipline central to patient safety and treatment efficacy.

As challenges intensify, physicists increasingly rely on shared scientific knowledge and multi-institutional experience. It is within this context that the Quality Assurance Dosimetry Symposium (QADS) has matured over fifteen years—from a focused dosimetry meeting into a broad scientific forum where experts collaborate to define the future of QA. QADS addresses a pressing need: a platform where complex QA questions can be examined openly, free of commercial bias, and guided by the experience of international thought leaders.

The Need for Evolving QA Approaches

Contemporary radiotherapy demands QA methodologies that keep pace with technological sophistication. Machine learning now influences planning and verification workflows. Adaptive radiotherapy compresses decision-making timelines. SRS and SBRT push dose gradients to extremes, raising the stakes for even minor uncertainties. Meanwhile, nuclear medicine and theranostics bring challenges in individualized dosimetry, imaging accuracy, and radiopharmaceutical behavior.

QA philosophy is also shifting from binary pass/fail criteria toward predictive, patient-specific approaches. Guideline harmonization, automated process control, and risk-based QC are increasingly central. These trends underscore the importance of a scientific forum capable of examining both the promise and the practical limits of emerging QA strategies.

QADS at Fifteen Years: A Forum Built for Scientific Dialogue

Driven by clinical need, QADS has evolved into a bi-annual touchpoint for physicists advancing QA science. The meeting convenes researchers, clinicians, and professional organizations to discuss methodologies, lessons learned, and the applied science behind new technologies.

Over its history, QADS has broadened alongside the field. Early meetings emphasized dosimetry and machine QA; recent years have placed greater focus on patient-specific verification, imaging-based QA, automation, and the intersection of radiotherapy and molecular imaging. What has remained constant is the meeting's commitment to neutrality and scientific integrity, offering an environment where challenges can be discussed openly and where new ideas are evaluated on merit and evidence. This year's 15th meeting features five scientific tracks reflecting both established QA needs and rapidly emerging domains.

Five Scientific Tracks Shaping QADS 15

1. **Future Directions of Machine and Patient QA**
   As platforms become more integrated and adaptive, the line between machine and patient QA continues to blur. This track explores predictive and proactive QA, including real-time monitoring, image-based verification, and automation-supported decision-making.

2. **In-Vivo Dosimetry and SRS/SBRT QA**
   High-precision treatments require sensitive, efficient QA tools. Topics include in-vivo dose monitoring, end-to-end testing, small-field considerations, and the uncertainties inherent in high-dose-per-fraction delivery.

3. **Safety, QC & Guidelines: Using the Right Tool for the Job**
   With increased focus on harmonized guidance, this track examines translation of EFOMP, ESTRO, IAEA, and AAPM recommendations into practice, emphasizing risk-based QC and sustainable QA program design.

4. **Emerging Technologies: Theranostics (NEW)**
   Reflecting the rapid expansion of radiopharmaceutical therapies, this new track addresses individualized dosimetry, multimodal imaging QA, workflow coordination, and the growing need for standardized approaches.

5. **Emerging Technologies: AI and Automation**
   This track evaluates the scientific principles behind AI-driven QA, including validation requirements, bias mitigation, and safe integration of automated tools into clinical workflows.

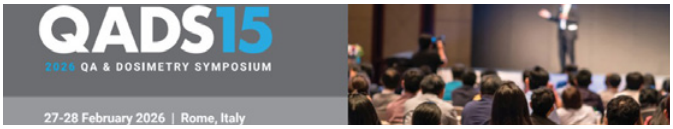
Looking Ahead to QADS 2026

The 15th Quality Assurance Dosimetry Symposium—held in Rome, Italy, February 27–28—offers an opportunity to engage with evolving QA science. The program is designed for physicists seeking not only new tools and techniques but also deeper insight into the principles that guide safe and effective treatment delivery.

QADS is hosted by Sun Nuclear, part of Mirion Medical, yet remains committed to a neutral, multi-vendor, scientifically focused environment rooted in shared knowledge and evidence-based discussion.

There is still time to register for QADS 2026, and physicists across Europe and beyond are invited to join the dialogue. As radiotherapy continues to evolve, meetings like QADS play an essential role in supporting a community dedicated to quality, safety, and continual advancement in patient care.

Registration here!



Dayna Bodensteiner, RTT, CMD, is Clinical Marketing Manager for Mirion Medical. A former Radiation Therapist and Medical Dosimetrist, she has 24 years' industry experience driving software and hardware innovation. She also leads the Educational Committee, developing the QADS agenda from a comprehensive slate of abstract submissions.

HERMES MEDICAL SOLUTIONS

Implementation of Hermia Dosimetry Software from Hermes Medical Solutions: Initial Clinical Experience from Ankara University

As the centre where the Hermia software was first installed in Turkey—a country at the forefront of patient volume and academic research in radioembolisation—we aimed to share our initial experience and perspectives with the medical physics community. The Department of Nuclear Medicine at Ankara University is among the country's leading centres for radionuclide therapies, including transarterial radioembolisation (TARE), I-131, Lu-177 DOTATATE, and Lu-177 PSMA therapies. Approximately one hundred radioembolisation procedures are performed annually at our centre, addressing both primary and metastatic liver tumours. The dosimetry software our centre utilises is Hermia SIRT (Selective Internal Radiation Therapy). Hermia SIRT follows the EANM guidelines and uses computer-assisted liver, lung, and lesion segmentation, provides live dose feedback, and allows planning and verification of multiple injections.

Over the past decade, the field of radioembolisation has evolved substantially, particularly with the growing emphasis on personalised dosimetry to maximise therapeutic benefit while minimising hepatic and systemic toxicity. This shift from empirical to quantitative treatment planning has created a demand for robust, validated, and user-friendly dosimetry platforms suitable for routine clinical practice. With this in mind, our department has long sought a reliable solution that combines simplicity with quantitative accuracy. Following positive interactions with Hermes Medical Solutions during both national and EANM congresses, we decided to implement the Hermia dosimetry software in our clinical workflow. After a concise online training session, the system was rapidly integrated into daily practice.

Our early experience revealed that Hermia's user interface provides remarkable workflow efficiency. The automatic segmentation of organs on CT datasets significantly reduces manual processing time. The one-click segmentation of perfused liver volumes and tumours is a particularly valuable feature, especially in centres with a high procedural workload. Additionally, treatment verification can be swiftly performed using post-therapy Y-90 PET/CT images without the need for re-segmentation, ensuring consistency between pre- and post-treatment dosimetry. These features collectively enable fast, reproducible, and clinically practical personalised dosimetry, aligning well with the increasing focus on patient-specific treatment optimisation.

From a research perspective, the workstation has streamlined our post-treatment dosimetric analyses, facilitating retrospective and prospective investigations with greater ease. The ability to export voxel-based dose maps and quantitative data directly from the Hermia platform supports reliable dose–response and toxicity correlation studies. Such improvements in data

handling are expected to accelerate our scientific output and enhance the precision of dosimetry-based clinical decision-making. We anticipate that these capabilities will strengthen multidisciplinary collaborations among nuclear medicine, radiology, and medical physics teams within our institution.

Figure. The Department of Nuclear Medicine at Ankara University.

Encouraged by this initial success, our next step will be to incorporate the voxel-based dosimetry module into our clinical and research protocols. This extension will enable a more comprehensive assessment of spatial dose heterogeneity, especially in liver parenchyma and critical structures, thereby improving our capacity to conduct detailed dose–effect modelling. The integration of voxel-level dosimetry will also contribute to our ongoing clinical trials investigating dose thresholds and radiobiological response in novel radionuclide therapies.

In summary, the implementation of the Hermia dosimetry solution from Hermes Medical Solutions at our centre has proven both feasible and beneficial for routine practice and research. Its intuitive interface, automation capabilities, and compatibility with multimodal imaging workflows have greatly improved efficiency and reproducibility. The software's seamless integration into TARE procedures exemplifies the potential of advanced dosimetry tools to promote the widespread adoption of quantitative, patient-centred treatment planning in nuclear medicine.

Prof. Cigdem Soydal, MD, FEBNM is a Nuclear Medicine specialist at Ankara University. Her clinical and research interests include Y-90 radioembolisation, personalised dosimetry, and theranostics. She has led several national studies on voxel-based dose–response analysis and advances quantitative PET/CT applications in oncological imaging and radionuclide therapy.

Introducing The Mako Display: App-Powered. Wireless. Future Ready.

Figure 1. The App-powered Mako Display connects wirelessly to the Mako Meter.

RTI Group proudly presents the Mako Display, a cutting-edge App designed to redefine the user experience of the RTI Mako X-ray Meter. With the power of wireless connectivity, ultimate speed and usability, Mako Display marks a revolution in X-ray testing.

Radiation Data Made Mobile – A New Era of Measurement Freedom

The Mako X-ray meter launch set new standards in X-ray testing, with its groundbreaking new detector design it boasts the best accuracy on the market, together with the broadest application range. Now, with the new Mako Display, accuracy just met speed, boasting the fastest and most intuitive experience of an X-ray meter. Delivering a completely wireless experience and unmatched speed, the Mako App transforms how X-ray testing is performed. No laptop required.

App-Powered Precision

Not only is the Mako Display lightning fast and convenient, it also builds on the market-leading capabilities of the Mako meter itself. Unlike other sensors built on outdated technology and requiring long cables, Mako offers a more accurate, modern and seamless experience:

- **Fully wireless**
  Powerful wireless capability means there is no need for long cables and unstable probes, eliminating uncertainty and messy setups.

- **No selections required**
  Simply place it in the X-ray beam and measure. No selections are required.
- **Orientation independent**
  No need to worry about directional placement, the Mako detector can be placed in any orientation and is insensitive to the heel effect.

- **Unmatched accuracy**
  Groundbreaking detector technology provides the market-leading accuracy, outperforming other meters across diagnostic X-ray modalities.

Real users, real pain points, real results

The Mako Display is a culmination of years working together with X-ray manufacturers, service groups, engineers, physicists and QA profes-

Figure 2. Fast real-time data and smooth touchscreen control.

sionals, establishing RTI Group's position as innovation leaders in X-ray testing. The Mako with App-powered display delivers on the 3 most requested features of an X-ray meter: Accuracy, Speed, and Simplicity.

During beta-testing of the display, Mako Display proved overwhelmingly to outperform competitor meters. Mako starts faster, is more intuitive, has a better testing experience with full wireless capability and produces more accurate results. Users preferred the Mako Display App to older models which have outdated displays, and proved that Mako "is easier", "feels more modern" and that users "prefer the Mako interface".

During testing, the display App delivers the smoothest workflow, with instant connection and the most accurate data. Users were happy to get rid of long cables and wobbly/unstable probes, in addition to having a meter that handles the latest X-ray systems, where competitor models struggle.

Future Ready Functionality

RTI's vision for Mako Display extends beyond measurement. The App's architecture is future-ready, built to integrate with cloud-based services, digital QA workflows, and data analytics.

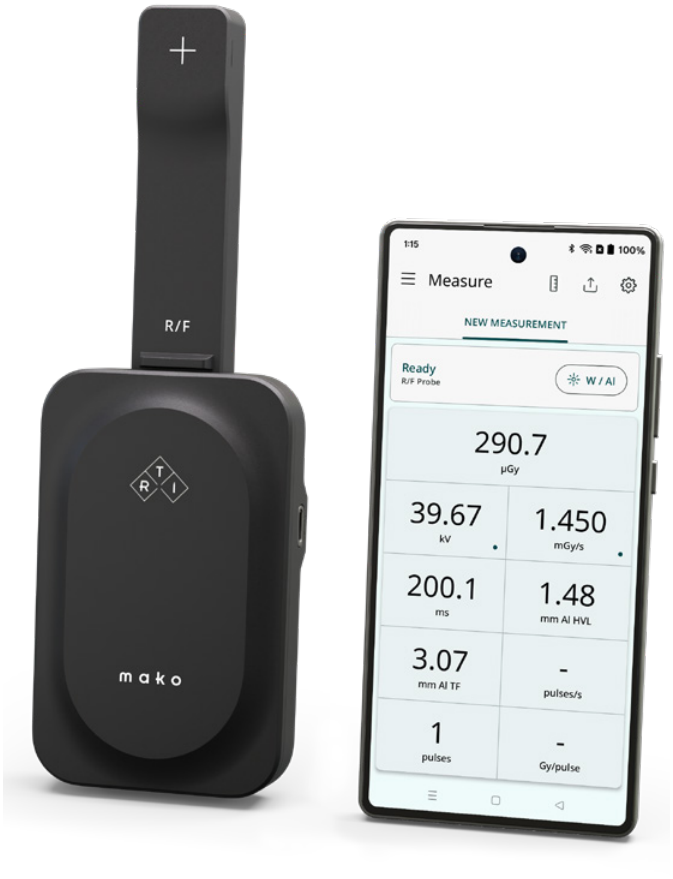


Figure 3. Mako X-ray Meter with Mako Display.

Together with RTI Ocean software, RTI offers the broadest range of software capabilities and flexibility in testing, and your chosen display can be wherever your phone, tablet or laptop is. The Mako Display App is available as a free download to your personal phone, with no restrictions, no user limits, no license and no cost. X-ray testing has never been easier.

With Mako Display, you're not just adopting a new App; you're investing in the next generation of X-ray tests and QA intelligence.

The Future of X-ray QA is Here

The Mako Display embodies RTI's ongoing commitment to innovation and setting the standard for X-ray QA. More than just an X-ray meter, RTI offers industry-leading calibration cycles, fast calibration turnaround times (10 days TaT), dedicated Support & Training teams as well as free

access to myRTI Customer Portal, for online access to a wealth of knowledge.

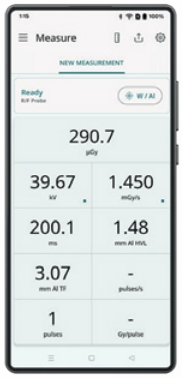
Wireless. App-powered. Future ready.

Discover the future of X-ray QA today, with the Mako Display from RTI.

Michael Olding, PhD, is Head of Product Management at RTI Group. Michael works on the interface between product development at RTI and global end users of RTI's products & solutions (physicists, engineers and medical professionals), and is passionate about ensuring user needs are at the forefront of new product development at RTI Group.

Mako meter — Radiation data made mobile

From measurement to insight in seconds



RTI Mako is engineered for efficiency and built for the future. It is the most accurate X-ray testing meter ever developed.

With cutting-edge sensor technology, plug-and-play simplicity, and complete wireless freedom, it delivers unmatched accuracy across the widest application range in the industry.

No laptop required. Connect the app-powered Mako Display for fast real-time data, instant results, and intuitive touchscreen control, or download the app to your own phone for the same powerful features.

Efficiency
Accuracy
Versatility

Wireless. App-powered. Future ready

INDEPENDENT X-RAY QUALITY ASSURANCE

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More Than a Safety Net: 3D EPID In Vivo Dosimetry Supports Clinical Decision-Making in Online Adaptive Radiotherapy

Figure. 3D EPID in vivo dosimetry detects clinically relevant treatment errors and helps to quantify their dosimetric impact.

Online adaptive radiotherapy (oART) is gaining traction in clinical practice, though still predominantly used for conventional treatments. Due to the high daily planning effort, selecting patients for oART requires careful consideration. EPID-based in vivo dosimetry offers a practical way to identify which patients could benefit most from this advanced technique.

Clinically Proven Back-Projection Algorithm for 3D Dose Reconstruction

3D EPID in vivo dosimetry adds an important safety layer to radiotherapy QA. Unlike traditional methods such as phantom measurements or dose recalculations, it can detect patient-related errors like anatomical changes or positioning inaccura-

cies. VERIQA RT EPID 3D uses a back-projection approach to reconstruct a clinically relevant 3D patient dose from 2D EPID images. The algorithm was developed by the Department of Radiation Oncology at the Netherlands Cancer Institute – Antoni van Leeuwenhoek Hospital (NKI-AVL) and builds on 20 years of clinical experience. It includes a patent-pending inhomogeneity correction based on Monte Carlo principles, enabling accurate dose reconstruction even in treatment regions with significant tissue density variations.

In Vivo Verification as a Safety Net

Monte Carlo-based dose calculations, such as those performed with VERIQA RT MonteCarlo 3D, are considered the gold standard for plan verification. However, they only detect planning errors. In contrast, 3D EPID-based in vivo dosimetry can identify clinically relevant errors across the full spectrum – including planning, transfer, machine and patient-related issues.

VERIQA RT EPID 3D requires no additional measurements, as EPID imaging runs automatically in the background during patient treatment. The 3D patient dose reconstructed via back-projection provides well-documented safety – without the need for constant monitoring. A traffic light system with customisable alarm thresholds highlights deviations, helping clinicians decide when closer inspection or a new planning CT is needed. Available since May 2025, the system has undergone extensive clinical testing across Europe.

Dr. Gaspar Sanchez Merino (Txagorritxu Hospital, Spain), who supervised a preclinical study, notes: "We see enormous potential in this tool to enhance treatment accuracy and improve patient safety."

3D EPID In Vivo Dosimetry: Supporting oART Treatment Decisions

In vivo dosimetry with VERIQA RT EPID 3D helps identify patients who may benefit from oART. This advanced treatment method requires daily planning, which is time- and resource-intensive, yet ensures adaptation to the patient's anatomy on the day of treatment. By enabling the monitoring of larger patient cohorts over time, EPID-based in vivo dosimetry supports informed decisions about which treatment regions are best suited for online-adaptive radiotherapy.

Ann van Esch, who clinically validated VERIQA RT EPID 3D together with the medical physics team at CHU UCL Namur in Belgium, emphasises: "VERIQA helps us detect dosimetrically relevant changes and focus our attention where adaptive therapy would be most beneficial." She highlights the breast as a promising region for oART due to frequent anatomical changes caused by swelling. Modular Platform for Flexible QA

Verification strategies vary by clinic, but a clear trend toward computational methods is emerging. The modular VERIQA software platform enables flexible combinations of verification methods. For example, Monte Carlo-based dose recalculation with VERIQA RT MonteCarlo 3D can be effectively complemented by VERIQA RT EPID 3D in vivo dosimetry – covering all relevant error sources without additional beam time.

Getting Started with EPID In Vivo Dosimetry

Introducing EPID-based in vivo dosimetry into clinical practice raises important questions – particularly regarding evaluation criteria and alarm interpretation. The strict criteria used for dose verification with VERIQA RT MonteCarlo 3D or conventional phantom-based QA cannot be directly applied to EPID-based in vivo dosimetry. PTW supports clinical users throughout implementation, and a whitepaper with recommendations from NKI-AVL offers practical guidance based on two decades of experience.

Before clinical commissioning, using a phantom such as RUBY is recommended. As an end-to-

end phantom, RUBY enables the simulation of anatomical and positioning errors. Comparing these with the in vivo results obtained from VERIQA RT EPID 3D helps users understand the system's capabilities and learn to interpret findings – ensuring smooth integration into daily clinical practice.

Building Know-How for oART

Experience with in vivo dosimetry builds valuable expertise for oART, where traditional measurement-based plan verification is no longer feasible. The patient receives the plan of the day, which can be efficiently verified during each treatment using EPID-based in vivo dosimetry – one more reason to explore this method as part of routine clinical practice.

For further insights into the clinical use and benefits of 3D patient dosimetry, PTW provides webinars and a detailed whitepaper with practical guidance from the NKI-AVL.

Julia-Maria Osinga-Blättermann is Product Manager at PTW Freiburg and holds a PhD in Medical Physics from Ruprecht-Karls University Heidelberg (2016). She joined PTW in 2018 and is now responsible for the development and clinical validation of the VERIQA RT EPID 3D software module.

Responsibility and Sustainability in Radiotherapy: LAP's Commitment to the Future

For over four decades, LAP has partnered with medical physicists to enhance accuracy and efficiency in radiotherapy. Our solutions for patient positioning and quality assurance are used in oncology **centres** worldwide. Yet our responsibility does not end with technological innovation. As healthcare providers face increasing demands for sustainable practices, LAP has embedded environmental and social responsibility into its operations.

This commitment is **organised** in LAP CREATES, a framework that guides our actions across designated key areas: Climate, Resources, Education, Accountability, Training, Ethics, and Security and Safety.

Climate – carbon neutrality

LAP has set itself the target of climate neutrality. As of today, our headquarters and German production facilities already operate with electricity sourced entirely from renewable energy. By 2030, this transition will be complete across all sites worldwide. This means that our products are manufactured under increasingly climate-neutral conditions.

Resources – efficiency from production to product life cycle

Minimising waste and recycling materials are central to our production processes. Our suppliers are evaluated against environmental management standards, ensuring that sustainability extends across the supply chain. Importantly, our medical devices are engineered for long life cycles, known from LAP's laser products. For physicists, this translates into reliable equipment with fewer resource demands over time, helping departments manage budgets while reducing environmental impact.

Education – investing in future expertise

Medical physics thrives on highly qualified professionals. LAP supports dual study programmes, apprenticeships, and continuous training opportunities for employees. At the same time, we provide training for clinical users of our systems. With new technologies such as Surface Guided Radiation Therapy (SGRT) gaining traction, knowledge transfer is critical. Our training ensures that physicists and clinical staff can integrate advanced tools efficiently and with confidence.

Accountability – products built to last

Every LAP solution is designed with durability and serviceability in mind. Components are selected not only for performance but also for their recyclability. This focus on product accountability means physicists can rely on consistent system performance for years while knowing that end-of-life processes are being addressed responsibly.

Training – ensuring safety and data protection

At LAP, regular health, safety, and cybersecurity training is mandatory for all employees. Data protection is central to our software development, especially in patient-related applications. For medical physicists, this provides reassurance that LAP systems are built to comply with high safety and IT security standards.

Ethics – integrity in every partnership

Trust is essential in healthcare. LAP's compliance management system is certified to ISO 37301, underlining our commitment to ethical conduct. Supplier selection also incorporates environmental, social, and governance (ESG) criteria, ensuring integrity throughout the value chain.

Security and safety – protecting people and data

LAP is certified to ISO 45001 for occupational health and safety, and our IT security framework is continuously strengthened to safeguard sensitive information.

Simply Precise – supporting physicists every day

LAP's brand promise, Simply Precise, reflects more than technical accuracy. It means delivering solutions that simplify complex clinical workflows, reduce error potential, and improve efficiency. Whether through our patient positioning systems LUNA 3D, APOLLO, ASTOR, DORADO or QA products RadCalc, EASY CUBE, EASY SLAB, THETIS, AQUARIUS, we aim to support physicists in providing safe, reliable, and efficient radiotherapy.

LAP is proud to be a long-standing partner for the medical physicist community. Through our CREATES framework, we aim to provide precise and reliable tools and contribute actively to a sustainable, ethical, and secure healthcare environment.

Find out more about LAP's commitment to sustainability in radiotherapy.
Link: Our contribution to a sustainable future.

Alicia Aschmann is Marketing Manager Healthcare at LAP and holds a Bachelor in Marketing. With experience in B2B marketing and corporate communications, she applies a holistic approach that combines diverse tools. Her work at LAP focuses on strategic, integrated approaches to position healthcare solutions, ensuring that LAP's innovations in radiotherapy are communicated with clarity and relevance to clinical and scientific audiences.

Availability of products, features, and services may vary depending on your location.

Season's greetings from LAP

LUNA 3D

The New More in SGRT

Get more information:
www.lap-laser.com

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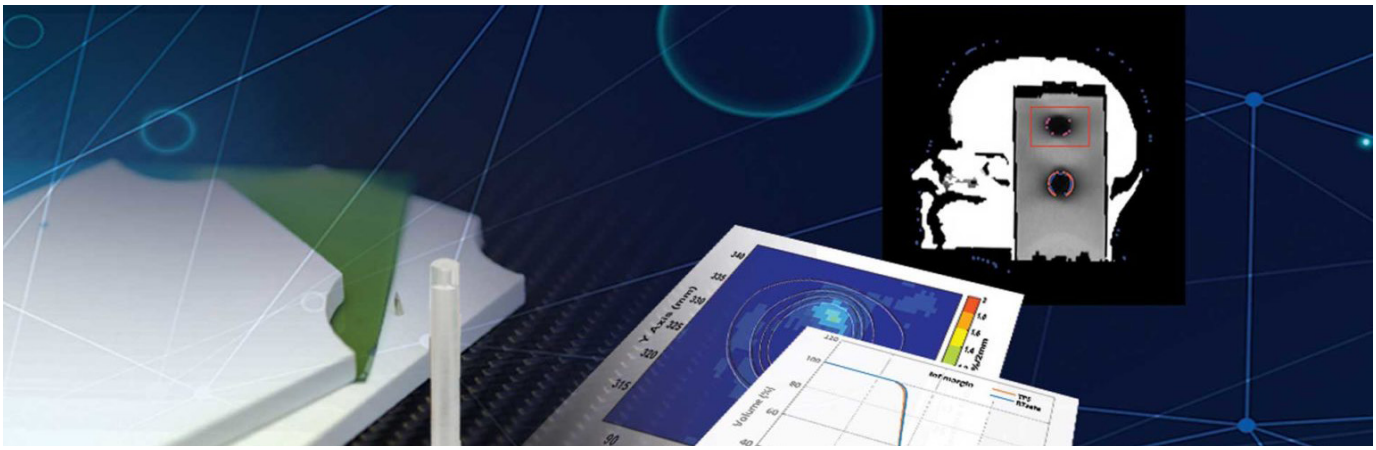
Simply Precise

RTsafe's dosimetry audit services: Ensuring Precision, Building Confidence



The evolution of stereotactic radiosurgery (SRS) and stereotactic body radiotherapy (SBRT) has brought remarkable advances to radiation oncology, alongside an increasing demand for independent, traceable quality assurance. As these high-dose, high-precision techniques demand exceptional geometric and dosimetric accuracy, external verification has become an essential component of safe and reliable clinical implementation.

Over the past years, RTsafe has developed a variety of complementary remote dosimetry and audit services designed to help clinical centers evaluate and strengthen their stereotactic workflows. What began as a focused initiative in intracranial SRS has evolved into a comprehensive framework that now includes body applications and formal certification pathways.

RTsafe's remote dosimetry services enable independent dose verification through point (OSL), 2D (EBT4 film), and 3D (polymer gel) measurements, traceable to a secondary standard dosimetry laboratory. RTsafe's remote dosimetry audit services extend these capabilities into a full end-to-end evaluation for SRS and SBRT. Using the RTsafe's Prime and SBRT anthropomorphic phantoms combined with multidimensional dosimetry, these audits evaluate the entire clinical workflow from imaging and treatment planning to dose delivery, ensuring that dosimetric accuracy and geometric precision are supported by a robust quality assurance process.

Beyond the dosimetry audits for SRS and SBRT offered by RTsafe under the succeSRS and succesSBRT services, RTsafe plays an active role in supporting international stereotactic standardization through its "Preparation for ISRS Certification" consulting service and participation in the official ISRS Certification procedure. It is noteworthy that ISRS relies exclusively on RTsafe's dosimetry services for the implementation of its certification programs in both SRS and SBRT. This responsibility underscores the trust placed in RTsafe's methodology, expertise, and measurement accuracy.

By aligning local workflows with ISRS criteria and providing detailed, data-driven feedback, these services guide centers toward compliance with globally recognized stereotactic benchmarks.

Since 2021, RTsafe has conducted over 110 audits across 30 departments in the USA, Europe, and Southeast Asia, covering a broad range of beam energies, clinical applications, and treatment modalities, including linacs, Gamma Knife, CyberKinife, and MR-Linacs. Clinical centers have utilized RTsafe's audit services for diverse purposes, such as internal evaluations (e.g., new MLC or TPS installations), accreditation support (ISRS, ISO), commissioning activities, and regulatory compliance through independent dosimetry verification. Each audit provides detailed, data-driven feedback that enables institutions to verify performance, refine techniques, and maintain consistency in stereotactic delivery.

Through these initiatives, RTsafe remains committed to advancing quality assurance and patient safety in SRS and SBRT. By combining traceable dosimetry, multidimensional verification, and standardized auditing processes, this framework promotes consistency and accuracy across SRS and SBRT workflows. RTsafe is proud of the international impact achieved so far and of its contribution to enhancing patient safety and building users' confidence in delivering precise, reliable, and high-quality stereotactic treatments.

Emmanouil Zoros is responsible for product management, data analysis, and film dosimetry at RTsafe. He holds a Diploma in Applied Mathematics & Physics from the National Technical University of Athens, and an MSc and PhD in Medical Physics from the National and Kapodistrian University of Athens. His research focuses on stereotactic radiosurgery QA and Monte Carlo dosimetry.

Vasiliki Margaroni oversees data analysis and scientific support at RTsafe. She holds a Diploma in Physics, and an MSc and PhD in Medical Physics from the National and Kapodistrian University of Athens. Her research focuses on QA, experimental and computational dosimetry in contemporary radiotherapy and radiosurgery systems.

Audit Services

Promoting a culture of excellence

RTsafe

succeSRS | successBRT

End-to-End Dosimetry Audit

- Verification of TPS dose calculations
- Advanced radiotherapy techniques: SRS / SBRT , IMRT / VMAT
- Whole treatment chain evaluation
- Dosimeters: OSL, Gafchromic EBT4 film, and polymer gel (optional)
- Phantoms: Prime Phantom & SBRT Phantom

AUDIT SERVICES

www.rt-safe.com
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tel: +30 210 7563691
48 Artotinis Street, 11633, Athens, Greece

Standard Imaging Welcomes Hospital Albert Einstein as Newest Center of Excellence Partner

Middleton, WI – Standard Imaging is proud to announce that Hospital Albert Einstein in São Paulo, Brazil has joined our global network of Centers of Excellence. Recognized as the #1 hospital in Latin America and ranked 22nd in the World's Best Hospitals 2025, Hospital Albert Einstein serves as a leading reference site for the radiotherapy community across the region.

Figure. Standard Imaging team with some of the team from Hospital Albert Einstein.

"We are honored to welcome Hospital Albert Einstein to our network of Centers of Excellence," shared Eric DeWerd, MBA, CEO and President of Standard Imaging. "Their leadership in patient care and commitment to advancing radiotherapy align perfectly with Standard Imaging's mission to support safer, more precise cancer treatments worldwide and we are proud to collaborate with them."

Through this partnership, Hospital Albert Einstein—led by Roberto Sakuraba, Chief Medical Physicist— will demonstrate Standard Imaging solutions in a clinical setting, providing valuable insights for prospective customers while advancing research, publications, and innovation in medical physics. Their International Patient Center exemplifies a global standard of care, supporting patients from around the world with a multilingual team dedicated to personalized, high-quality treatment experiences.

Mrs. Julieta Romani, Medical Physicist and International Account Manager said, "Having Hospital Al-

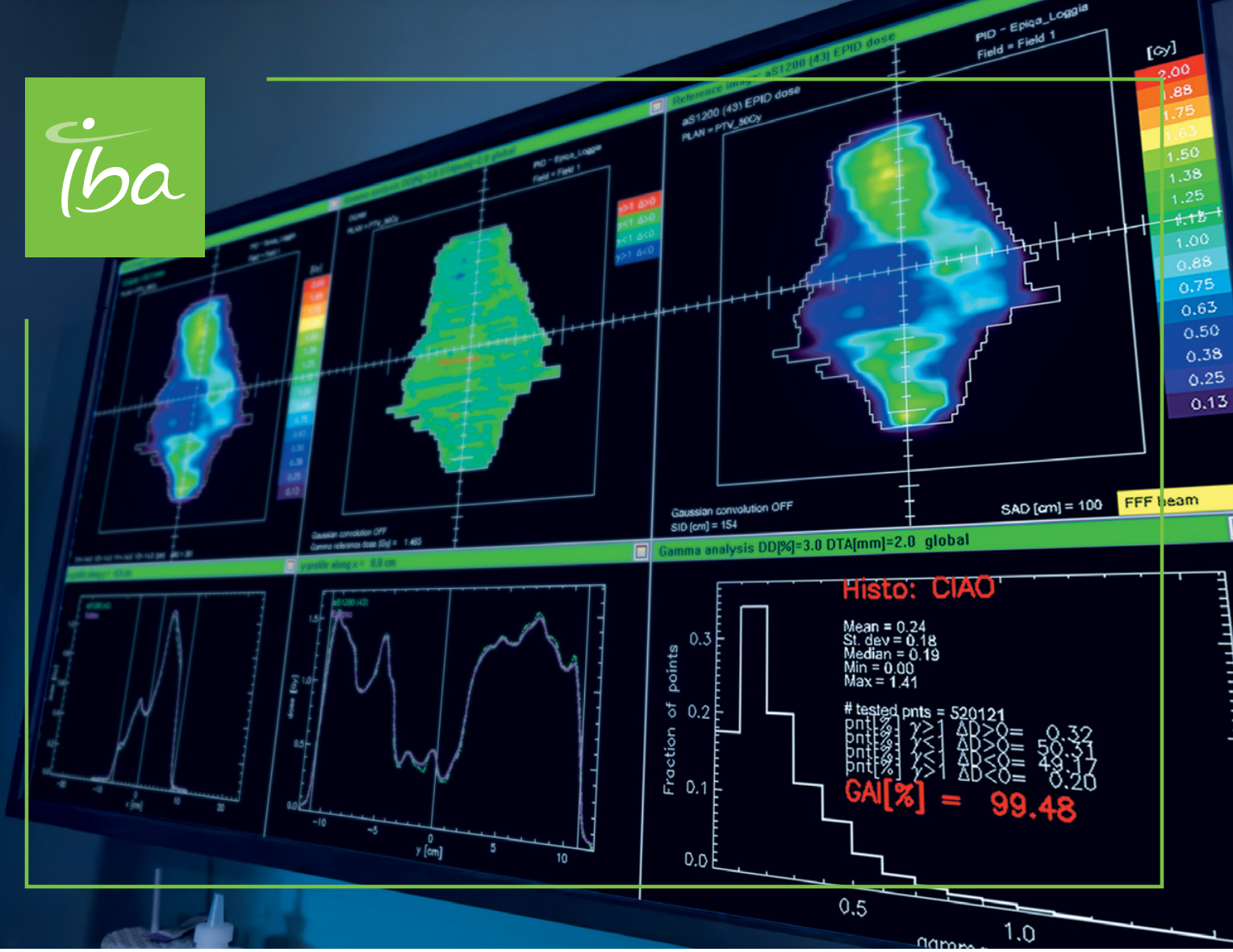
bert Einstein as part of our Centers of Excellence is an exciting step for Standard Imaging in Latin America. Their reputation for excellence and dedication to advancing treatment standards makes them an ideal partner to demonstrate the value of our solutions to the wider community. This partnership will create opportunities to exchange knowledge, support innovation, and strengthen patient-centered care across the region."

Standard Imaging Centers of Excellence highlight institutions committed to advancing quality assurance and patient safety. Each collaboration is uniquely structured, with tailored support such as product access, maintenance, and shared expertise—fostering innovation and strengthening clinical practice worldwide.

About Standard Imaging
Standard Imaging remains at the forefront of the industry with cutting-edge QA solutions that guarantee precise, reliable, and safe patient care. By continuously advancing technology and setting new standards of excellence, they reinforce their commitment to equipping clinics worldwide with the essential tools for achieving optimal treatment outcomes. For more information, contact the Standard Imaging team.

References: https://rankings.newsweek.com/worlds-best-hospitals-2025

Ashley Reis is the Marketing Operations Lead at Standard Imaging and has been with the company since 2020.



Epiqa:
In-vivo constancy QA made effortless

Fast. Accurate. Flexible.

- Automated EPID-based QA for every patient, every fraction, every field
- Seamless integration with all major linacs
- Pre-Treatment and in-vivo constancy QA in one solution
- Proven gamma analysis reliability
- Automatic EPID image acquisition for effective QA

Discover more about Epiqa and elevate your QA workflow.

Advancing MRI Physics in Europe: The Mission of the EFOMP MRI Special Interest Group

The EFOMP MRI Special Interest Group (MRI-SIG) brings together medical physicists from across Europe who share a common goal: to promote excellence, harmonisation, and collaboration in Magnetic Resonance Imaging.

The Steering Committee, elected in July 2025 for a three-year term, consists of: Ioannis Tsougos (Greece), Eveliina Lammentausta (Finland), Emer Kenny (Ireland), Claudia Testa (Italy), Cormac McGrath (UK), Ioannis Seimenis (Greece), Simone Busoni (Italy)

The Board includes: Convener: Ioannis Tsougos, Vice Convener: Eveliina Lammentausta, Secretary: Emer Kenny

Magnetic Resonance Imaging (MRI) is one of the most advanced and versatile modalities in clinical practice and research, providing unparalleled insight into anatomy, physiology, and function. However, its complexity, diversity of hardware and software, and continuous technological evolution pose challenges to achieving consistency across centres.

The MRI-SIG aims to foster collaboration, harmonise practices, and promote knowledge exchange among European medical physicists working in MRI. Our mission is to build a strong and connected community that supports both scientific advancement and professional development.
A key focus of the group is the standardisation and harmonisation of MRI protocols across institutions. Through collective efforts, the MRI-SIG is developing recommendations and consensus documents that facilitate comparable and reproducible MRI data, enabling multi-centre research and supporting clinical translation. These actions are closely linked to EFOMP's broader goals of quality assurance and professional excellence in medical physics.

Education is another cornerstone of the group's activities. The MRI-SIG organises webinars, workshops, and collaborative courses designed to address both foundational principles and emerging topics such as quantitative MRI, diffusion modelling, spectroscopy, and hybrid imaging. By bringing together experts and early-career professionals, the group promotes an open, inclusive learning culture that encourages continuous professional growth.

The MRI-SIG also serves as a platform for scientific collaboration, bridging academia, clinical departments, and industry. Ongoing projects explore innovations in MRI safety, artificial intelligence, and digital phantoms — all aimed at improving diagnostic accuracy and workflow efficiency. By sharing experiences and expertise, members contribute to shaping the next generation of MRI technology and applications.

Communication and visibility are equally important. The group maintains an active presence within EFOMP's communication channels, contributes to major European conferences such as ECMP, and collaborates with other EFOMP committees and National Member Organisations.

These efforts ensure that the MRI community remains connected and engaged in advancing best practices throughout Europe.

Looking forward, the EFOMP MRI-SIG envisions a European ecosystem of MRI excellence built upon collaboration, trust, and scientific rigour. By uniting medical physicists under a shared vision of harmonisation and innovation, we aim to enhance patient care, research quality, and professional education across all European countries.

We warmly invite all medical physicists interested in MRI to join our activities, share their experience, and take part in shaping the future of MRI physics in Europe. Together, we can transform our collective knowledge into meaningful progress

Incoming meetings:

- 6th European Congress of Medical Physics, 6 September 2026, Valencia, Spain.
- Annual Scientific Meeting, European Society for Magnetic Resonance in Medicine and Biology
  30 September –3 October 2026, Girona, Spain.

How to Become a SIG_MRI Member
SIG_MRI is open to professionals interested in magnetic resonance. Membership is available to all EFOMP members. Instructions for joining can be found on the SIG_MRI page of the EFOMP website: SIG_MRI Membership

Ioannis Tsougos, PhD, Professor of Medical Physics at the University of Thessaly, Greece, and Visiting Senior Research Fellow at King's College London. He serves as the Chair (Convener) of the EFOMP MRI Special Interest Group, focusing on MRI standardisation, quantitative imaging, and AI-assisted analysis.

Special Interest Group for Radionuclide Internal Dosimetry (SIG_FRID) report

The objective of SIG_FRID is to establish a network of medical physicists working in radionuclide dosimetry. SIG_FRID aims to meet the need for networking, education, research, and professional exchanges in this field.

The current membership of SIG_FRID stands at 272. New applications are always welcome (please see below for details on how to become a SIG member).

Steering Committee
The composition of the Steering Committee as of March 2024 is:

- Manuel Bardiès (Chair)
- Julia Brosch-Lenz
- Carlo Chiesa
- Gerhard Glatting
- Silvano Gnesin
- Pablo Mínguez Gabiña (Vice-Chair)
- Steffie Peters
- Katarina Sjögreen Gleisner (Secretary)
- Lidia Strigari

The priorities of the SIG_FRID Steering Committee are:

- **Priority 1**: Scientific meetings.
- **Priority 2**: Focus group management and follow-up.
- **Priority 3**: Teaching/Education/Dissemination.
- **Priority 4**: Communication.
- **Priority 5**: Professional/Regulatory/Economic matters.

A summary of the most recent activities in these priorities is provided below.

Priority 1: Scientific meetings & Case reports

All scientific meetings and case reports are available in the "Webinar Repository" of EFOMP's e-learning platform, e-LEMENT.

We hope to see many of you at these meetings!
Priority 2: Focus Group (FG) management and follow-up
The updated FGs and their leaders are:

- FG2 Treatment Planning Systems (Lidia Strigari)
- FG3 Absorbed dose–effect relationship (Lidia Strigari)
- FG4 Voxel S-Values (Julia Brosch-Lenz)
- FG5 DICOM Standard (Manuel Bardiès)
- FG6 Accuracy of therapeutic activities for nuclear medicine applications (Silvano Gnesin)
- FG7 MRT dosimetry education (Katarina Sjögreen-Gleisner)
- FG8 Simplified dosimetry (Sasha Ivashchenko and Deni Hardiansyah)

Priority 3: Teaching/Education/Dissemination

A total of 24 pre-recorded webinars on the basics of clinical nuclear medicine dosimetry have been released on the EFOMP eLearning platform for individual associate members.

All webinars are also available on our YouTube channel.

Priority 4: Communication
SIG_FRID members are invited to distribute relevant information via the SIG_FRID email list or Slack, including relevant papers, PhD applications, job openings, and grant opportunities.

EU matters:

- **RATIONALE (Radionuclide Theragnostics for Personalised Medicine)** COST action is open to new members. Opportunities include networking, short-term visits, student exchanges, and Schools: https://www.cost.eu/actions/CA22118

- **European Partnership for Personalised Medicine:** New Fast Track and Venture Creator Programmes.

- **EU4Health Work Programme 2025:** Supports strategic health priorities and funds initiatives in cardiovascular health, digital health, cancer, health technology assessment, crisis preparedness, medicines, medical devices, and substances of human origin.

Calls for proposals:

- **Trials4Health**: Seventh Joint Transnational Call by ERA4Health for multinational clinical trials, pre-proposal deadline 27 January 2026. Virtual information day: 13 November 2025:

- **EP PerMed Twinning Call 2026**: Supports the joint implementation of personalised approaches in healthcare. Funding up to €50,000; submission deadline 26 February 2026. Virtual information day: 17 December 2025; matchmaking event: 15 January 2026:

Priority 5: Professional/Regulatory/Economic matters

- **SimpleRad project final report**

- **Survey on LUTATHERA administration**: Responses obtained from Poland, Czech Republic, France, Germany, Italy, Netherlands, Spain, Sweden, Norway, Switzerland, Mexico, and the USA. Members in other countries are asked to forward the survey to regulatory officers, pharmacists, or nuclear medicine specialists (medical physicists may also respond).

- **EMA multi-stakeholder workshop**: Date not yet announced; will complement the January 2025 public consultation on therapeutic radiopharmaceuticals in oncology (EMA/CHMP/451705/2024)

- **European Parliament breakfast meeting (24 September 2025)**: "Advancing radioligand therapies in Europe" – highlighted RLT promise and need for EU coordination. The aim of this meeting was to 'highlight the promise of RLTs in cancer care and the need for EU coordination to ensure equitable access'. SIG_FRID thanks Glenn Flux for making a big effort to take part in the meeting and provided us with notes about it.

Some members of the UE Parliament presented short talks. The meeting was dominated by representatives from Spain & Italy Nuclear medicine associations represented by their respective Presidents. The only company represented was Novartis by Iris Zemzoum, President, Region Europe. In very few words, most speakers asked for funding and legislation harmonisation by the EU to expand RLT. Filip Maksan, Policy Officer, DG Energy, European Commission, stated that the relevant legislation are the Clinical Trials Directive and the BSSD 2013/59

Incoming meetings:

- 6th European Congress of Medical Physics, 23–26 September 2026, Valencia, Spain.

- 41st EANM Annual Congress, 17–21 October 2026, Vienna, Austria.

How to Become a SIG_FRID Member
SIG_FRID is open to professionals interested in radionuclide dosimetry. Membership is available to all EFOMP members. Instructions for joining can be found on the SIG_FRID page of the EFOMP website: SIG_FRID Membership.

Pablo Mínguez Gabiña (PhD Lund University) is a senior medical physicist at the Gurutzeta/Cruces University Hospital in Barakaldo, Spain and a part-time professor at the faculty of engineering of the University of the Basque Country in Bilbao. He is the Vice-Chair of the Steering Committee of SIG_FRID.

Determination of a field output and volume averaging correction factors in Gamma Knife dosimetry

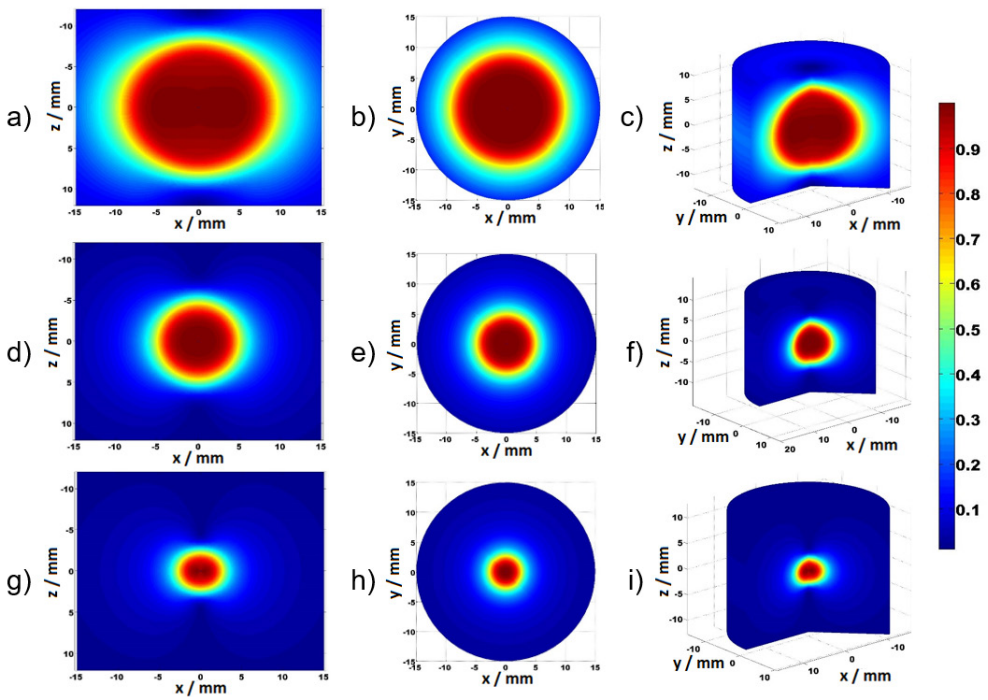


Figure. A Gamma Knife Perfexion field size simulation using the ellipsoid absorbed dose model in 3D and projection at different planes. From top to bottom; 16, 8 and 4 mm field size.

Small field dosimetry refers to the determination of the absorbed dose in photon beams smaller than 3×3 cm², such as those produced by the Co-60 used in Gamma Knife. Gamma Knife Perfexion beams have non-uniform dose distributions with steep gradients and ellipsoidal shapes corresponding to nominal field sizes of 16, 8, and 4 mm (Figure 1).[1] Accurate dosimetry in such fields is challenging due to the finite size of the detectors, the loss of lateral charged particle equilibrium, and the detector's perturbation of the secondary electron fluence. [2,3]

The main objectives of this study were to experimentally determine the field output factors of Gamma Knife fields and to estimate the associated measurement uncertainties for various detector types. In addition, volume-averaging correction factors for different detectors were determined, as well as their contribution to the total detector-specific correction factor. [4]

Output factors were determined for seven ionization chambers, four semiconductor detectors, and one diamond detector. All detectors were positioned in a solid-water phantom parallel to the Gamma Knife's z-axis during measurements. Because each detector perturbs the Co-60 beam fluence differently, detector-specific correction factors were determined. Comparisons with Monte Carlo simulations and results obtained using reference radiochromic EBT3 film revealed that ionization chambers generally underestimate output factors.

Large ionization chambers were found to be unsuitable for the smallest (4 mm) Gamma Knife field, with correction factors falling outside acceptable limits.[3] As the field size increases, these perturbations become less significant. The ionization chamber with the smallest effective volume

(V= 3 mm^3) demonstrated the best agreement with both Monte Carlo and EBT3 film results.

Measurements using silicon semiconductor detectors tended to overestimate absorbed dose values because of silicon's higher atomic number compared with water. Nevertheless, in the 8 mm field, their output factors showed statistically significant agreement with Monte Carlo and EBT3 film results. Some semiconductor detectors have protective shielding that reduces sensitivity to low-energy scattered photons, making them suitable for large-field dosimetry. Despite this, the study showed they can also be used effectively for narrow Co-60 beams, although their agreement with Monte Carlo simulations was slightly weaker than that of unshielded semiconductor detectors. The synthetic single-crystal detector was identified as an excellent choice for small-field Gamma Knife dosimetry.

Volume-averaging correction factors were calculated using an analytical ellipsoidal absorbed dose model (Figure 1) and by simulating detector geometry inside different fields. Corrections were calculated for fourteen detectors, including ionization chambers, semiconductor detectors, plastic scintillation detectors, and a synthetic single-crystal detector. Results showed that the volume-averaging correction factor has a dominant contribution to the total detector-specific correction factor. Volume-averaging correction factor is inversely proportional to the field size and generally increases with detector volume; however, besides detector size, shape also plays a critical role.

References

[1] Mirzakhanian L, Benmakhlouf H, Tessier F, Seuntjens J. Determination of kQmsr,Q0fmsr,fref factors for ion chambers used in the calibration of Leksell Gamma Knife Perfexion model using EGSnrc and PENELOPE Monte Carlo codes. Med Phys 2018;45:1748–57. https://doi.org/10.1002/mp.12821.

[2] Andreo P. The physics of small megavoltage photon beam dosimetry. Radiotherapy and Oncology 2018;126:205–13. https://doi.org/10.1016/j.radonc.2017.11.001.

[3] International Atomic Energy Agency. Dosimetry of Small Static Fields Used in External Beam Radiotherapy, Technical Reports Series No. 483. Vienna: 2017.

[4] Šegedin N, Hršak H, Babić SD, Jurković S. Determination of volume averaging correction factors using an elliptical absorbed dose model for Gamma Knife Perfexion. J Appl Clin Med Phys 2023:e14109. https://doi.org/10.1002/ACM2.14109.

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Evaluating plan conformity using scripting techniques

Introduction

Estimating the conformity of a radiotherapy treatment plan can, in some cases, be difficult to perform reliably. If the assessment is done visually, the result of the evaluation may vary from one person to another. Therefore, a less user-dependent approach is preferable.

The treatment planning system Eclipse (Varian Medical Systems, Palo Alto, USA) has a built-in function called Gradient Measure (GM) to assess conformity [1, p. 380]. However, because the GM calculation is based on the sizes of equivalent spheres, information about the shape of the isodose is lost. Isodoses with completely different shapes can produce the same GM values (see Figure 1). One method for retaining the shape information is to sample the dose distribution and obtain the distances between a planning target volume (PTV) and an isodose. These distances can then be used to provide a numerical result.

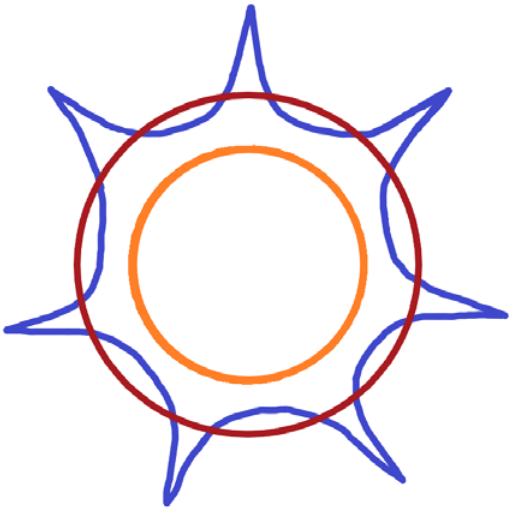

Figure 1. Different isodose shapes – the blue and red lines – cover the same area, resulting in equal GM values. The orange circle represents both the PTV and the 100 % isodose line.

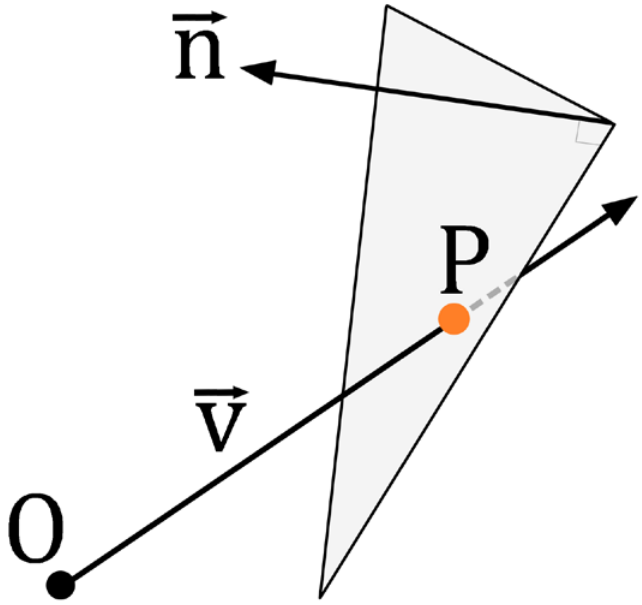

Figure 2. The way the script uses vectors to estimate PTV-to-isodose distances: from the starting point to the PTV (the yellow vector) and from the PTV to the isodose (the green vector).

Methods

A script was created using Eclipse Scripting API version 16.1 (Varian Medical Systems, Palo Alto, USA). For each PTV-containing computed tomography (CT) slice, the script forms a vector from a starting point defined as the central point of the PTV, positioned longitudinally to the corresponding slice. The vector rotates with a set angular resolution, sampling distances from the PTV to an isodose.

To minimise distance overestimation, the vector stops when it encounters the surface of the PTV. From this point of encounter, a second vector is formed, which proceeds along the direction of the surface normal of the PTV. Once this vector meets the isodose structure, the distance between it and the PTV can be calculated, as structures in Eclipse are formed from small triangles. An example of the formation of these vectors is shown in Figure 2.

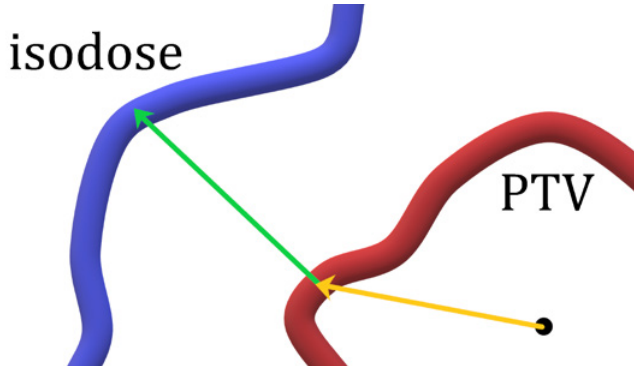

Figure 3. How the vectors n and v, with the point of encounter O, are formed for the calculation of the coordinates of the intersection point P.

Results and discussion

The approach to determine plan conformity is based on the analysis of a histogram of the stored distances. This is achieved by selecting a suitable upper limit and calculating the proportion of distances that exceed this limit. Histogram analysis was chosen over using the average distance because the latter cannot reliably obtain information about the isodose shape. This is plainly evident from the analysis of the GM example of Figure 1 using the script (see Figure 4).

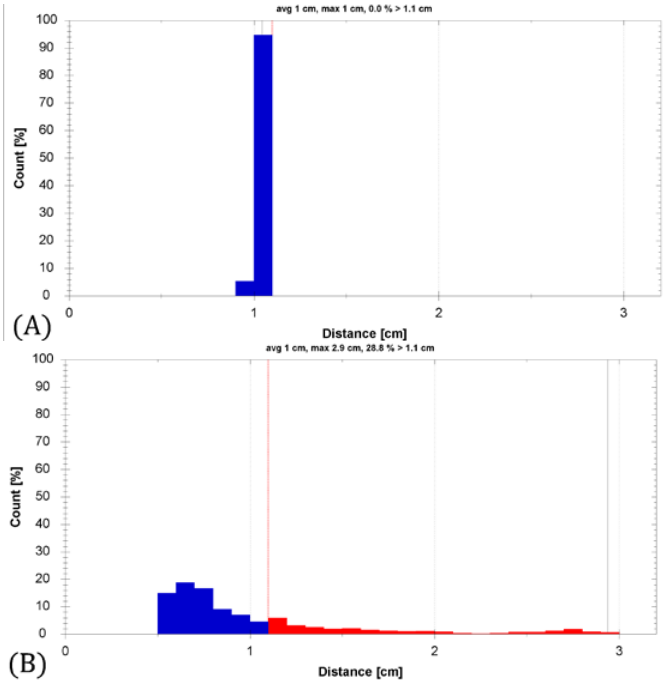

Figure 4. Histograms from the script's evaluation of the isodoses presented in Figure 1. The upper limit was, for illustrative purposes, set as 1,1 cm. (A) Red isodose. (B) Blue isodose.

Ideally, in order to minimise user dependency, the script should be able to choose the upper limit automatically. To achieve this, the effect of various variables — such as the shape and the size of the PTV — on the limit selection must be thoroughly assessed.

Initial testing has shown that the less circular the edge of the PTV is, the less reliably the absolute quality of plan conformity can be evaluated. With more complex forms, there is more unwanted overestimation of PTV-to-isodose distances. Therefore, the script could be used as a relative tool to compare the conformities of different plans for the same PTV, where distance overestimations caused by the PTV's shape would be identical. Determining the script's suitability for evaluating the absolute quality of plan conformity requires further testing, and it will likely be limited only to plans with nearly spherical PTVs, such as stereotactic treatments.

References:

[1] Eclipse Photon and Electron Reference Guide. Finland: Varian Medical Systems, Inc; 2021. P1047679-002-B.

[2] Ericson C. Real-Time Collision Detection. San Francisco, U.S: Morgan Kaufmann Publishers; 2005. ISBN: 1-55860-732-3.

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SCRIPT WORKFLOW

```
FUNCTION EvaluatePTVtoIsodoseDistances()
// vector_: A 3D vector.
// distances_: A list used for storing distances.

  // 1. Loop through all CT slices.
  FOREACH ct_slice IN ct_slices

    // 2. Loop for every angle of vector_ using angular resolution of φ radians.
    FOR vectorAngle = 0 TO 2π WHERE vectorAngle = vectorAngle + φ

      // 3. Find a point of encounter O(x1, y1, z1) which is the most distant one on the PTV.
      // This is done similarly as in steps 4.-9.
      // 4. From O form a vector v, by using the surface normal of the triangle where O is located.
      v = (x, y, z)

      // 5. Loop through every triangle in the isodose structure.
      FOREACH triangle_ IN isodose_structure_triangles

        // Create an equation group consisting of two equations:
        // O + tv = (x1 + tx, y1 + ty, z1 + tz) and AX + BY + CZ + D = 0.
        // AX + BY + CZ + D is the plane equation for a point (X, Y, Z) on the plane.
        // D = -(Ax0 + By0 + Cz0), where point (x0, y0, z0) is a vertex of triangle_.

        // 6. Solve the scalar t from the equation group.
        // Substitute (X, Y, Z) with (x1 + tx, y1 + ty, z1 + tz).
        // Denote vector n as a normal of the plane, originating from (x0, y0, z0).
        t = -(Ax1 + By1 + Cz1)/dot(n, v)

        // 7. Calculate coordinates of an intersection point P(x2, y2, z2) on the plane.
        P = O+tv
        // The vectors v and n, as well as the points O and P, are illustrated in Figure 3.
        // 8. Check whether P is located inside triangle_.
        // IsPointInsideTriangle uses barycentric coordinates as shown by Ericson [2, pp. 46-52].
        IF IsPointInsideTriangle(P, triangle_) == true THEN
          // 9. Calculate PTV-to-isodose distance d.
          d = sqrt((x2-x1)^2 + (y2-y1)^2 + (z2-z1)^2)

          // 10. Compare and update the maximum distance dmax.
          IF d > dmax THEN
            dmax = d
          END IF
        END IF
      END FOREACH

    // 11. Store dmax, which corresponds to the furthest away protruding part of the isodose.
    distances_.ADD(dmax)
    END FOR
  END FOREACH
END FUNCTION
```

Experience Conducting Medical Physics Research at a National Clinical Radiology Conference

Approaching the final year of my part-time PhD, and having had the opportunity to share our findings at multiple medical physics conferences during that period, including ECMP2022 in Dublin, I decided it was time to expand my horizons and reach out to medical colleagues.

My project has centred on the process of optimising image quality in general radiography. The methodology has been predominantly quantitative in nature, exploring and analysing metrics relating to image quality. As with much physics-rooted research, I have dabbled in coding, played around with data visualisation, and put pen to paper to disseminate our findings [1]. However, we were aware of the pitfalls of siloing physics research from the contributions of other professions involved in the delivery of a radiology service. As the AAPM's 'medical physics 3.0' [2] initiative correctly points out, it is the responsibility of medical physicists to represent the profession to all stakeholders by platforming the part we can play in advancing and enhancing clinical services [3].

With this in mind, I contacted the Irish Faculty of Radiologists and Radiation Oncologists, whose scientific committee generously allowed us a 'pop-up research centre' at their annual scientific meeting (ASM), held in the history-steeped Royal College of Surgeons buildings in the heart of Dublin city in September 2025. Nestled between industry exhibitors and the many high-quality scientific posters on display, we placed an overflowing bowl of sweets on our table and set about luring any lone delegates to our desk to discuss image quality and our research.

Credit for the seed of the idea behind this model of 'pop-up' research must be attributed to Dr Rachel Toomey and her team [4], based in University College Dublin. Our paths crossed at the European Congress of Radiology in Vienna earlier in 2025, where their busy pop-up research centre was gathering valuable insight from passing delegates.

Figure. Our 'pop-up research centre' at the Faculty of Radiologists and Radiation Oncologists' Annual Scientific Meeting.

Our experience at ASM was extremely positive. The atmosphere was enthusiastic, in part due to the novelty of a day of engaging discussion and, perhaps, bolstered by our proximity to the coffee dock. Our study was designed specifically for the event. The remit was to interview the end users of X-rays on their interpretation of a selec-

tion of images. The format of the interview was semi-structured; delegates were asked for their commentary on the image quality of six pairs of anonymised shoulder radiographs displayed on a laptop. An open-ended approach to questioning allowed for both quick insight and more long-form discussion. The busy conference floor did not lend itself to audio recording, so quick notes were taken during the interviews, which lasted between three and ten minutes each.

One of the best tools in our arsenal for the day was Scorim [5], an online platform for conducting image perception studies, developed by Mr Ronan Coleman from St James's Hospital, Dublin. Use of the platform facilitated the showing of images in DICOM format, which meant the research participants could alter brightness and contrast, and zoom and pan as they would in a typical reporting session. This allowed for a very realistic interaction with the images on display, and opened the opportunity for nuanced commentary on image detail.

I would highly recommend this experience for both personal career development and as a method for performing clinically targeted research. The interview data have been influential in shaping our next steps and have provided rich insight to supplement our quantitative work. Through shared vision and a broad range of expertise, the multidisciplinary team approach can be the pathway to quality outcomes.

References:

[1] Devery C, *et al.* Evaluation of workload distribution and exposure factors in common use in ten general X-ray rooms in Ireland: An initial step towards protocol optimisation. Radiography 2025;31:419–25. https://doi.org/10.1016/j.radi.2024.12.021

[2] Samei E, *et al.* Redefining and reinvigorating the role of physics in clinical medicine: A Report from the AAPM Medical Physics 3.0 Ad Hoc Committee. Med Phys 2018;45. https://doi.org/10.1002/mp.13087

[3] Caruana CJ, Damilakis J. Being an excellent scientist is not enough to succeed! Soft skills for medical physicists. Eur J Radiol 2022;155:110108. https://doi.org/10.1016/j.ejrad.2021.110108

[4] Toomey RJ, *et al.* The pop-up research centre – Challenges and opportunities. Radiography 2019;25:S19–24. https://doi.org/10.1016/j.radi.2019.05.009

[5] Coleman R, *et al.* Scorim – Development of a novel online visualisation platform for facilitating image perception studies. Phys Med 2025;138:105129. https://doi.org/10.1016/j.ejmp.2025.105129

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Interview with prof. Michael Ljungberg

A summer visit of professor Michael Ljungberg (Medical Radiation Physics, Lund University, Sweden) to the Medical Physics and Radiation Protection Department of University Hospital Rijeka (Croatia) triggered an idea about the interview. For the first time he visited Rijeka a few years ago as the International Atomic Energy Agency (IAEA) expert. After that he has been visiting Rijeka almost each year. His later visits were dedicated to PhD investigations of Ivan Pribanić and Dea Dundara Debeljuh.

Figure 1. Michael Ljungberg with a crew from the basement.

Among others, during his visit this summer professor Ljungberg was invited by the Faculty of Physics to present a cross-section of his work, being a medical physicist for more than forty years.

Besides hard work, when someone comes to the Adriatic Sea it is supposed to do as locals do. Therefore, we also had a lot of good time talking about physics, Mediterranean food, rock 'n' roll, the Simple Minds concert in an ancient Roman circus placed nearby, Fiume o morte documentary, Tokyo stories of Midnight Diner TV series, the steak contest in South Africa...

Figure 2. After work, happy hour in the summer shade.

Michael Ljungberg began his research in the Monte Carlo field in 1983 through a project involving the simulation of whole-body counters. He later shifted his focus to more general applications in nuclear medicine imaging and Single Photon Emission Computed Tomography (SPECT). As a parallel to his development of the Monte Carlo code SIMIND, he started working in 1985 on quantitative SPECT and problems related to attenuation and scatter correction for both diagnostic and therapeutic applications. He established successful collaborations with various international research groups.

Q: It can be said that the rest is history, dear Michael. There are many stories from the time when the application of the Monte Carlo simulations in medical physics was young. May you share the one when a young medical physicist from Sweden was invited to the US to conduct a workshop?

Re: My main PhD period was between 1985–1990, during which I developed SIMIND and used it to evaluate attenuation and scatter correction. Dur-

ing an AAPM conference in Memphis, Tennessee, I presented an abstract on the SIMIND code, and it happened to be so that Professor Michael King, University of Massachusetts Medical Center, Worcester, was the moderator of that session. After my talk, he approached me and asked if we could collaborate in some way. He had recruited a new post-doc, and he wanted him to go into the Monte Carlo field, but he did not have the resources to develop their own programme. Of course, I accepted to work with him since he was to me a very prominent person in nuclear medicine research. We worked for about 1.5 years, with several trips for me to the USA, on a specific scatter correction method, called the DPW method. One day he asked me if I would like to arrange a two-day course on SIMIND in Worcester with theory and practical sessions and if I could then share the code with the participants. He said he could call all his research friends to attend the course. I accepted and started to prepare for the course by writing manuals and cleaning up the programme to be more user-friendly. When all his friends came, I realised that these friends were all the top researchers in the field that I had read about, and as a newly graduated PhD, that was to me somewhat scary. However, they were all very friendly, and we had a very good time together. That workshop and meeting those people in that local environment actually completely changed my working life and opened many doors to international collaborations. Michael King and I are close friends and have kept in contact through the years.

Q: Well, that's when your interest in Monte Carlo simulations began and it lasts ever since. Your group in Rijeka has a privilege to witness recent developments of your SIMIND and SIMREC algorithms. Please say more about these algorithms.

Re: Yes, the SIMIND has been developed starting from 1983, as you mentioned, as part of a task to get credits in a PhD course. The programme is basically a gamma camera model that simulates planar and SPECT imaging. One of the first major applications was to understand the problem with scatter in the projection data. Since this is not possible to be explicitly measured from a phantom experiment, the SIMIND code became very much used to study different types of scatter correction methods and for different radionuclides. Also, in the mid-1990s, the pros and cons of radionuclides for transmission studies were studied with SIMIND. As we in Lund have a long history of research related to radionuclide therapy and dosimetry, we started to use MC simulations for relevant radionuclides used here, especially 201-Tl, 111-In, 131-I, 90-Y, and 177-Lu. I will here mention close colleagues of mine — Professor Eric C. Frey, Johns Hopkins Medicine, Baltimore, and Professor Yuni Dewaraja, University of Michigan Medical Center, USA — whom I have had a very long and fruitful collaboration with regarding patient-specific dosimetry and research questions related to quantitative SPECT. During this time period, we had ongoing research regarding generating simulated SPECT images using more patient-specific phantom models. One such model that we have been working with very much is the XCAT phantom, developed by Dr Paul Segars, Duke University. The models from XCAT in combination with SIMIND allow for very realistic patient simulations. During a period, I worked part-time as a clinical medical physicist, and here I became interested also in diagnostic nuclear medicine imaging and in particular myocardium perfusion studies. Parallel with SIMIND, we in the group in Lund developed methods for more patient-specific dosimetry, and in these projects, SIMIND was very useful here for different applications regarding optimisation. We also started working with CZT detector modelling. Around ten years ago, I was thinking of making a version of SIMIND, being a complete reconstruction programme. This was possible since SIMIND basically is a very accurate forward projector. Together with my colleague Johan Gustafsson, Lund University, we wrote a programme, unofficially

called SIMREC, that the group in Rijeka is now working with. This programme is basically the SIMIND, but at runtime SIMIND stops after certain simulated projections in order to reconstruct a new source distribution that is then put into the SIMIND before continuation. Other research groups have been taking advantage of SIMIND using a separate reconstruction programme, but we included the reconstruction as an internal part of the framework for SIMIND. SIMREC is not in the public domain, but we will see about this after the Rijeka work on the evaluation of SIMREC is finished.

Figure 3. Michael Ljungberg.

Q: Do you still have an interest in developing your code after these many years? Don't you get bored?

Re: No – I think this is one of the fascinating things with working with programming because it is problem-solving in nature that in most cases requires that one must solve by oneself. Furthermore, there are always new things coming in nuclear medicine like systems with new detectors, reconstruction, different collimators and camera configurations, so it is always a challenge to see if these features are possible to model within the SIMIND framework. I may be old-fashioned in my thinking, but I would find it boring to just rely on calling on AI tools to generate a code and I am not sure if this would work for such a complex programme as SIMIND. In my mind, one loses a dimension here in not learning to give up a problem until you get it right. Concerning the usage of SIMIND, I decided very early to let SIMIND be free for people to use in research and education. I have over the years tried to help users as much as I can, and it seems like the programme is designed in a way that it is relatively easy to get going. It is therefore always fascinating when emails arrive at my inbox from people whom I don't know about expressing gratitude for being able to use the programme for their research and/or education. I have recently tried to compile published papers, found in databases like PubMed, where SIMIND has been an essential tool, and my collection is now about 250 papers. Perhaps half of them are not with me as a co-author so the programme lives its own life in a way. This gives me a really good feeling of having done something that also others can use and learn from.

Q: During years it results in various international collaborations and friendships worldwide. One of the longest lasting is related to Cuba. Isn't it?

Re: One of the pleasures of my work is the possibility of meeting people and sharing knowledge in a more personal way than only going to conferences and presenting abstracts. In addition to the researchers mentioned above, I have had a long-lasting collaboration since 1997 with the nuclear medicine group in Bloemfontein, now under the leadership of Johan van Staden and Hanlie du Raan, and a collaboration with the nuclear medicine group at the Tabriz University of Medical Sciences, Iran, led by Professor Jalil Pirayesh Islamian, whom I have known since 2005,

and that has made several research projects based on SIMIND modelling and they have published many papers. Of course, there was also the work with the group at the Centre for Clinical Research, Havana, Cuba, as you mentioned, under the leadership of Dr Leonel A Torres. We met in the beginning of 2000, and I have worked with him and his colleagues since that time in several IAEA projects. We even at one time donated a complete SPECT system to them and with good skills they had this camera running for 15 years. Currently, we are working on a multi-centre study on quantitative SPECT for cardiac amyloidosis. Given the circumstances with embargoes and limited resources that Dr Torres works under, I think he and his group are doing a fantastic job. I also appreciate very much the collaboration with the nuclear medicine group at IAEA and with Dr Peter Knoll and his IAEA predecessors on various projects. During the years, this collaboration has given me the possibility to go to different places around the world, meet interesting people and give lectures and workshops on SIMIND and on my research areas.

Q: You have published more than 170 scientific papers and several textbooks. This required complete dedication to investigation research and education.

Re: Yes, I have always liked to teach my subjects in different places. I have also been able to write book chapters and textbooks, as you mentioned – two books on Monte Carlo Calculation in Nuclear Medicine with applications in diagnostic imaging and one three-volume book series entitled Handbook of Nuclear Medicine and Molecular Imaging for Physicists. The handbook was really a challenge because it happened to be scheduled during the pandemic period. Since I was the only editor managing the three volumes, Christmas 2021 was quite stressful to meet the deadline, but with help from fantastic authors with positive attitudes and a supporting wife, I managed to finalise it more or less on time.

Figure 4. Karin and Michael Ljungberg on the golf court – Who won the game?

I think writing textbooks and chapters for education are very important tasks for an academic teacher, but unfortunately, this work is not always acknowledged in terms of merits by the academia itself.

Q: Was there any time left for your other interests?

Re: Yes, hopefully there are other things to do in life. I have retired from the full professor position at the Medical Radiation Physics but plan to work part-time with research. I have got funding for using MC simulations to create different types of test images for SPECT and planar studies that can be used as reference material for those sites that don't have the possibility to go deeper into running full MC of their own. I think this can be helpful for comparison between sites also. The studies are aimed to be in DICOM format for different vendors. In my other time, I will play golf and play drums with my present band, The Eminents, and here perhaps learn some new drumming styles that I have never had time to practise before.

In my younger age, I was quite good at golf and hopefully I will take back some of those skills at the driving range. I also like to do recording with my electronic drum set where I substitute the

original drums with my own, making the songs, of course, much better. I also enjoy playing drums with fellow musicians like it was at an open-air festival Musikföreningen Kävlinge with the Bjuv Blues Band. I will also try to travel more with my wife, Karin, who also retired recently, and use the free time we now have in Australia with my daughter. She lives in Brisbane for seven years now and works as a post-doc researcher in the field of biomedical research after graduating from the University of Queensland. I will also enjoy being with my friends and perhaps do some drumming in our church. Karin and I used to drive motorbikes, but we have not done so for many years, but one never knows about taking this up in the future.

Q: It was nice to talk to you, Michael, and I really enjoyed your jamming with the Blues band so I take the liberty of publishing the YouTube link to your gig.

Thank you so much for this interview. Looking forward to seeing you next year in Rijeka again.

Figure 5. Karin and Michael Ljungberg on the golf court – Who won the game?

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Working as a Medical Physics Expert in Austria

GENERAL INFO

Number of medical physcs experts in country: 89 (Status 2024)
Name of National Member Organisation (NMO): ÖGMP (Austrian Society for Medical Physics)
Link to website: https://www.oegmp.at/
"Medical Physicist" in the national language: Medizinphysiker(m)/Medizinphysikerin(f); Medizinphysikexperte(m)/Medizinphysikexpertin(f)

BECOMING MPE

What are the entry requirements to become a trainee for MPE status?
Admission to the training program for Medical Physicists (MP) and subsequently for Medical Physics Experts (MPE) generally requires a degree in Physics or a related field, completed with a Master's degree (MSc). After finishing the degree, an application for the start of training can be submitted to the ÖGMP.

The training to become a Medical Physicist lasts three years and can be completed in two different ways:
1. University program at the Medical University of Vienna (ULG):
This program comprises 60 ECTS of theoretical coursework, leading to the qualification "Academically Certified Medical Physicist."

2. Self-organized training path:
In this case, candidates must obtain 48 ECTS from university-level courses with recognized certificates, plus an additional 12 ECTS from accredited training seminars.

Both training pathways must be supervised by a mentor. During the practical training phase, a practical catalog (30 ECTS) assigned to the respective specialty area must be completed. Fulfillment of all requirements is reviewed by the Professional Recognition Committee [PRC], which issues the corresponding certificate. Only after receiving this certificate can candidates proceed to the advanced MPE training.

The MPE training program requires an additional two years and focuses particularly on scientific aspects of the profession. In total, 30 ECTS of theoretical continuing education must be completed. For the practical component, another catalog defined by the ÖGMP (30 ECTS) must be fulfilled. The training concludes with a professional examination.

How would a student proceed to find training positions in Austria?
ÖGMP homepage or local recruitment.

Can you describe the training period?
The training is accompanied by a mentor (MPE) who coordinates the practical training.
Duration of practical experience required before obtaining MPE status:

Three years to become a Medical Physicist (equivalent to a Qualified Medical Physicist) and an additional two years to become an MPE (equivalent to a Specialist Medical Physicist). During the practical activity, a protocol with precisely defined work packages must be completed.

Is there an additional exam to become an MPE?
At the end of the training a final oral examination must be completed.

WORK AS MPE

In which fields do MPE work and in which proportions?
Radiotherapy: 66% – Nuclear Medicine: 15% – Radiology: 15% – Audiology: 2% – Magnetic Resonance Physics: 2%.

What is required in terms of continuous professional development while working as MPE?
The validity of the professional recognition will be extended for another five years if the holder of the professional recognition (1) has been professionally active in the specialty area of Medical Physics for at least two full-time equivalent years during the past five years, and (2) provides proof of continuing education amounting to 150 Continuing Education Points (CEPs) during the corresponding period, of which at least 80 CEPs must be obtained in the area of the specialty field.

Which role does research play for MPE in Austria?
To become an MPE, relevant scientific activities must be demonstrated. In university institutions, MPs and MPEs are expected to show appropriate scientific involvement. In some institutions, employment is also contingent upon meeting specific scientific performance requirements..

INTERNATIONAL MOBILITY

Which steps would be necessary for an MPE from another European country to obtain MPE status in Austria?
The verification of the equivalence of professional recognition from other countries with the professional recognition of the ÖGMP is carried out by the Professional Recognition Comittee (PRC) of the ÖGMP. If necessary, the PRC will impose appropriate conditions to ensure the attainment of equivalence. The qualification level is determined by the PRC.

The PRC of the ÖGMP recognises professional qualifications issued by other countries in accordance with the current EFOMP guidelines as equivalent, provided that the admission requirements under Chapter 4, as well as the training, further education, and continuing education measures in accordance with the guidelines of the ÖGMP, are fulfilled.

Which language skills are required for MPE work?
The required language skills depend on the area of deployment and the local structure and cannot be answered clearly. In approximately 90% of all local job postings, German language skills at level B2 are required.

Dr. Christoph Gaisberger is Head of the Medical Physics Team in Salzburg, Austria, and has served as a member of the Executive Board of the Austrian Society for Medical Physics (ÖGMP) since 2020. In 2024, he was elected Vice President of the ÖGMP.

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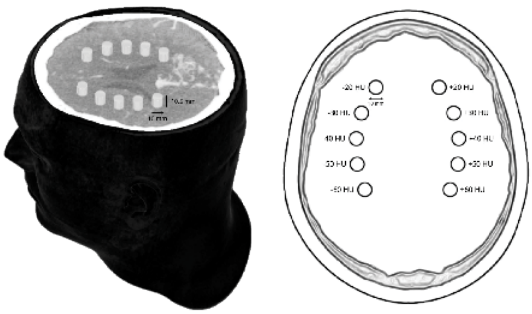
- **Realistic anatomy** for CT, radiography, and fluoroscopy
- **Supports AI validation** with standardized, repeatable testing
- **Embedded inserts** for calibration and image-quality metrics
- **Optimized for imaging performance studies and regulatory compliance**

CTA AVM / LESION



Building Trustworthy AI in Radiology Starts with Physics-Based QA.

HERCA Re-launches Awareness Campaign: “Getting the right image for my patient”

Figure . Re-launch of HERCA’s Awareness Campaign: “Getting the right image for my patient”- Helsinki, September 2025.

On 11th September 2025, HERCA (Heads of the European Radiological Protection Competent Authorities) officially re-launched its awareness campaign “Getting the right image for my patient”, a coordinated European initiative aimed at raising awareness on the appropriate use of medical imaging.

The campaign targets healthcare professionals responsible for referring patients for radiological examinations in routine clinical practice. Although medical imaging plays a vital role in diagnosis and treatment, it also entails exposure to ionising radiation—making proper justification essential to safeguard patient health.

While radiological examinations are intended to benefit patients, evidence from multiple European studies indicates that a significant number of these examinations may be unnecessary. Recent findings from a coordinated European audit (part of the EU-founded EU-JUST-CT project) revealed that in some countries, up to 40% of CT scans could be considered inappropriate.

Initially launched in November 2019, the cam-

paign faced limited dissemination as the COVID-19 pandemic hindered national activities. In light of this and the recent findings from the EU-JUST-CT project - which provided new insights into justification practices across Europe - HERCA decided to relaunch the campaign.

Today, 21 European countries are actively participating in the campaign in a joint effort to promote the appropriate use of medical imaging across Europe. The core materials developed in 2019 remain central to the initiative, now enhanced with updated evidence and national adaptations. At its heart lies a set of seven key questions designed to support referring healthcare professionals in making informed decisions when requesting radiological examinations. The campaign's goal is clear: to ensure that patients receive the right diagnosis through the right examination, enabling timely treatment.

Participating countries coordinate their own outreach using the shared resources, ensuring both consistency and local relevance. Early feedback highlights a range of promotional activities, including:

- Social media campaigns and updates on national radiation protection authorities' websites
- Articles in newspapers, radio segments, and ministry newsletters
- Regulatory inspections focused on the importance of ensuring that every radiological examination is justified, appropriate, and of real benefit to the patient.
- Webinars for general practitioners and presentations at national conferences.

HERCA hopes that this campaign will raise awareness on the appropriate use of medical imaging and contribute to the broader goal of enhancing patient-centred healthcare across its member states. To evaluate the campaign's impact, a HERCA follow-up coordinated European inspection action on justification is planned for next year, building on the previous one carried out in 2016, to assess whether the awareness campaign has led to improvements in justification practices since then.

More information, including access to campaign materials and national pages, is available on HERCA's website.

Maria Kalathaki, MSc in Medical Physics, Regulator/inspector, Greek Atomic Energy Commission (EEAE). Maria Kalathaki joined EEAE in 2003, as a Medical Physicist at the Ionizing Radiation Unit Department. Her main areas of interest are Diagnostic and Interventional Radiology.She has been a member of the HERCA Medical Applications Working Group since 2011.

Hanne N. Waltenburg joined the Radiation Protection unit of the Danish Health Authority in 2001, initially as an inspector and from 2007 as Head of the Section for Medical Applications. She has been involved in Nordic Radiation Protection cooperation since 2002, and a member of the HERCA Medical Applications Working Group since 2010.

EANM New Journals

A New Chapter for EANM: Launching Two Open-Access Journals

In August 2025, the European Association of Nuclear Medicine (EANM) took a major step forward in scientific publishing by launching two fully EANM-owned open-access journals, both published by Elsevier. This initiative aims to foster innovation, enhance interdisciplinary collaboration, and strengthen ties with allied sciences, including the medical physics community, whose contributions are increasingly vital to nuclear medicine's evolution.

Two journals, one shared vision

The first, The EANM Journal, is the flagship publication of the Association, led by Editor-in-Chief Prof Arturo Chiti. As outlined in his editorial "Why not a new journal?", the launch marks EANM's renewed commitment to scientific integrity, selectivity, and community ownership. The journal focuses on high-quality, clinically relevant studies in diagnostic and therapeutic nuclear medicine, reflecting the maturity and breadth of the field. Its mission is to be not only a reference for clinicians and researchers, but also a platform for the next generation of scientists to publish with rigour and transparency.

The second, EANM Innovation, opens a new and complementary path. Led by Editor-in-Chief Prof Riemer H.J.A. Slart, it provides a dedicated space for emerging ideas, novel technologies, and interdisciplinary approaches in nuclear medicine and molecular imaging. As Prof Slart describes in his editorial "A new journey begins", the journal is "more than a publication — it is a platform for the community to share, collaborate, learn, and lead".

Figure 1. From left to right: Prof Arturo Chiti, Dr Esther Pilla and Prof Riemer Slart, pictured during the EANM 2025 Annual Congress in Barcelona, celebrating the launch of The EANM Journal and EANM Innovation.

Together, the two journals create a dynamic publishing ecosystem: one focused on consolidated scientific excellence, the other on forward-looking innovation and creativity.

Interview with Prof Riemer Slart, Editor-in-Chief of EANM Innovation

To explore how EANM Innovation can also serve as a bridge between nuclear medicine and medical physics, EMP News spoke with Prof Riemer Slart about the vision behind this new journal.

What motivated the creation of this new journal, and what gap do you hope it will fill?

The idea was to create a dedicated platform that embraces technological advances and novel methodologies in nuclear medicine. While The EANM Journal focuses on clinically established research, EANM Innovation aims to fill a crucial gap by spotlighting emerging innovations, interdisciplinary collaborations, and transformative

technologies that have the potential to shape the future of the field. This journal provides a space for early-stage research, technical developments, and proof-of-concept studies that might not yet fit into traditional clinical frameworks but are vital for driving progress.

Figure 2: Editorial Board of EANM Journals at EANM'25.

What inspired you personally to take on the challenge of becoming the Editor-in-Chief of a completely new journal?

The excitement of starting something new with a great team. I see it as a chance to build a community around innovation — bringing together scientists, clinicians, engineers, and physicists who want to share and create together.

Being Editor-in-Chief means I get to help shape that vision from day one, support innovative research that might not fit into traditional journals yet, and build a community that's eager to share, learn, and bring together. It's an exciting challenge and a real privilege.

The journal is designed to encourage multidisciplinary collaboration. Which fields or communities — beyond nuclear medicine — do you hope to engage most actively?

We hope to actively engage a broad spectrum of fields, including medical physics, biomedical engineering, radiopharmaceutical chemistry, data science, artificial intelligence, and even areas like computer science and materials science. Engaging these diverse experts enriches the journal's content and accelerates translational research.

Open access is central to EANM Innovation. How do you think this model will help accelerate scientific exchange and visibility for authors?

Open access removes barriers to knowledge dissemination, allowing anyone worldwide to access cutting-edge research without subscription fees. This inclusivity increases visibility and impact for authors, facilitating faster scientific exchange and broader collaboration. For a rapidly evolving field like ours, this immediacy and accessibility are crucial for translating research into clinical practice and technological advancements.

From your perspective, what makes EANM Innovation particularly relevant to the medical physics community and to professionals working at the interface of technology and patient care?

EANM Innovation provides a unique forum for medical physicists and technology-focused professionals to publish work that bridges theoretical development and clinical application. It recognises the pivotal role these experts play in developing new imaging modalities, optimising radiation delivery, and improving diagnostic accuracy, so strongly needed in procedural guidelines. By encouraging submissions that explore new devices, software tools, and analytic techniques, the journal highlights the synergy between technological innovation and improved patient care.

Finally, what message would you like to share with researchers considering submitting their first paper to EANM Innovation?

To EFOMP colleagues: this is your platform to showcase innovative ideas and multidisciplinary

work that could shape the future of nuclear medicine. We value rigour, creativity, and collaboration. Don't hesitate to share early-stage or unconventional studies that push boundaries — our editorial team is committed to supporting authors through a constructive peer-review process. Together, we can advance science and bring new solutions to patients faster.

A call for collaboration

The launch of The EANM Journal and EANM Innovation represents not only a milestone for EANM but also an invitation to the medical physics community. These journals open new avenues for publishing work that connects physical principles, technology, and clinical application — from quantitative imaging and instrumentation to theranostics and personalised dosimetry.

As open-access platforms, both journals embrace transparency, collaboration, and accessibility — values shared by EFOMP and EANM alike. For medical physicists, this means greater visibility, wider impact, and new opportunities to shape the future of nuclear medicine.

For more information, visit: https://eanm.org/publications/eanm-journals/.

Rita Albergueiro is a Medical Physics resident specialising in Nuclear Medicine at the Local Health Unit of São João in Porto, Portugal. She holds a master's in medical physics and collaborates with the IPO Porto Research Centre in projects on medical physics, radiobiology, and radiation protection. She joined EFOMP's C&P Committee in 2025 and is one of the local organisers for the ESMPE School for Radiation Biology.

Prof Riemer H.J.A. Slart is Professor of Nuclear Medicine and Molecular Imaging at the University of Groningen and University Medical Center Groningen, the Netherlands, and is affiliated with the Biomedical Photonic Imaging Group at the University of Twente. His research focuses on hybrid and quantitative molecular imaging in cardiovascular and oncological diseases. In 2025, he became the founding Editor-in-Chief of EANM Innovation, the new open-access journal of the EANM.

17th International Conference “Medical Physics in the Baltic States 2025”

Figure 1. Participants of the conference on the first day.

Kaunas University of Technology proudly celebrated the International Day of Medical Physics (IDMP 2025) as part of the 17th International Conference & Workshop ‘Medical Physics in the Baltic States 2025’, bringing together experts and researchers from across the world. This year, the conference proudly hosted 132 participants representing 18 different countries: including Lithuania, Malaysia, Italy, Estonia, Malta, Sweden, Latvia, India, Sudan, Uzbekistan, Poland, Germany, Serbia, Iceland, New Zealand, Hong Kong, Finland, the United States, and Lebanon (Figure 1).

The International Conference and Workshop is usually organised every two years by Kaunas University of Technology (Lithuania), the Lithuanian Society of Medical Physicists, and Lund University (Sweden), with endorsement from the European Federation of Organisations for Medical Physics (EFOMP). This EBAMP accredited CPD event for Medical Physicists awarded participants 23 CPD points at EQF Level 8.

The conference kicked off with an inspiring first session full of ideas and experience sharing. Eva Boman, Chair of the EFOMP Scientific Committee, opened with a talk on EFOMP’s key role in promoting medical physics across Europe. Eugene Lief followed by describing how the AAPM supports global collaboration and helps physicists in low- and middle-income countries. Adding a Baltic perspective, Joosep Kepler (Estonia), Martins Piksis (Latvia), and Kirill Skovorodko (Lithuania) shared recent achievements and challenges from their national medical physics societies.

A heartfelt thank you to all the speakers of our scientific programme for their valuable insights and contributions!

Figure 2. Moments from the workshop, including the on-site visit to the M-Lab Centre and hands-on practice sessions, where participants explored cutting-edge technologies and engaged in practical activities.

The workshop programme this year (Figure 2) was centred around the theme 'Personalized Radiation Medicine' and featured an exclusive on-site visit to the M-Lab Centre, a hub of innovation that unites 12 thematic laboratories across diverse R&D fields, by combining research and study activities, M-Lab strengthens students' practical abilities and promotes collaboration between science and business. Value-added innovations in electronics, biomedical engineering, sustainable energy, chemistry, digital health technologies, and telemedicine are driven by M-Lab's ability to test and validate solutions under real-life conditions with an emphasis on human health, well-being, and the surrounding environment. Participants also enjoyed an interactive, hands-on experience: 'From Medical Imaging to 3D Models – Segmentation to Support Surgical Planning, offering cutting-edge insights into planning, kindly presented by Olga Posredņikova (Latvia).

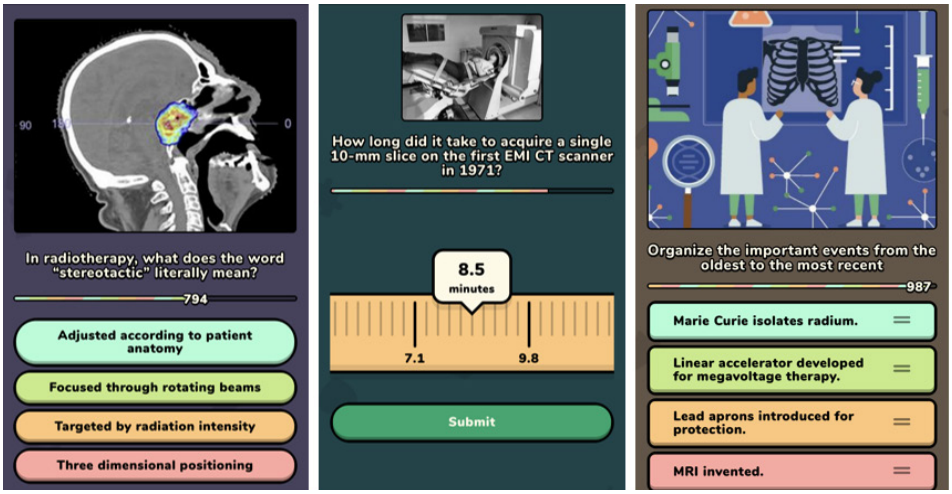


Figure 3. The engaging quiz to celebrate The International Day of Medical Physics.

To mark the International Day of Medical Physics a quiz titled 'Medical Physics and Emerging Technologies' (Figure 3) was presented for participants of the conference. The quiz featured a diverse array of questions, spanning topics from the history of medical physics to intriguing facts that sparked curiosity. The event celebrated the role of medical physics and innovative technologies in advancing healthcare. Ready for a challenge? Scan the QR code below and dive into the quiz to uncover intriguing facts!

The Young Scientists Award, which recognised the outstanding scientific accomplishments of early-career scientists, was proudly presented by the Conference this year. The award recognised the most outstanding oral and poster presentations showcasing the talent and innovation of the next generation of researchers (Figure 4).
We would also like to thank our sponsors, whose commitment and support contributed to the successful realization of the event and enabled us to present the latest advances in medical physics!

Take a glimpse at some memorable moments from the 17th International Conference and Workshop 'Medical Physics in the Baltic States 2025'!

Figure 4. Memorable moments from the conference, featuring young researchers presenting their posters and engaging in discussions and collaborative interactions among participants.

Greta Karpavičienė is a medical physicist working at the Radiotherapy Department of the Lithuanian University of Health Sciences Kaunas Clinics Oncology Hospital she is also pursuing her PhD in Biophysics at the Lithuanian University of Health Sciences, where her research focuses on artificial intelligence-based methods for biomedical image analysis.

Celebrating the International Day of Medical Physics 2025: Innovation, Humanity, and Collaboration Across Europe

Every year on 7th of November, the global medical physics community gathers to celebrate the International Day of Medical Physics (IDMP), an occasion that commemorates the birthday of Marie Skłodowska-Curie and highlights the vital role that medical physicists play in healthcare. It is a day to reflect on our scientific heritage and to look forward towards innovation, interdisciplinarity, and the human values that drive our profession. This year, celebrations across Europe captured this spirit in inspiring ways. Medical physicists in various European countries came together to discuss the latest advances in research, the evolving identity of the profession, and the impact of emerging technologies on the future of medicine. In this article, I will present three IDMP events in three different European countries: Italy, Spain, and Portugal.

Figure 1. Agrigento 'Valley of the Temples', Italy.

Italy: Innovation, Knowledge Transfer, and the Future of Medical Physics

In Italy, the IDMP was celebrated with a rich programme in the breathtaking location of Agrigento, this year's Italian Capital of Culture (figure 1). In honour of the venue, this year's gathering combined historical reflection, technological progress, and national discussion on the future of the field.

The opening session focused on nuclear medicine, tracing its evolution from early discoveries to the latest clinical applications. The first scientific session explored innovation in medical physics, with several prominent speakers. An overview of ongoing research across multiple domains was offered, including computational systems and data management for healthcare. A national project led by the National Institute for Nuclear Physics to develop health-oriented computational infrastructures in Bologna, Bari, and Sicily was presented. However, speakers also highlighted one of Italy's persistent challenges: data privacy fragmentation, with each region following distinct rules that hinder data sharing and research collaboration.

Another highlight came from a representative of the CERN Knowledge Transfer section, who discussed how technologies originally developed for fundamental physics, such as Timepix photon-counting detectors and accelerator and gantry innovations for ion therapy, are being successfully translated into medical applications through cross-sector collaboration.

The director of the National Inspectorate for Nuclear Safety (ISIN) also emphasised the growing importance of radiation safety and regulation in light of Italy's ongoing debate about nuclear

energy and potential adoption of Small Modular Reactors (SMRs), calling for stronger cooperation between ISIN and AIFM in ensuring nuclear and radiological protection.

The following speakers, focusing on the Sicilian perspective with national relevance, introduced innovative approaches such as secondary dose calculation systems for quality assurance, particularly useful for advanced radiotherapy delivery techniques. A round table of four medical physicists followed, each discussing the future of medical physics within their domain: from diagnostic imaging and nuclear medicine (including theranostics, AI, and radiomics) to radiotherapy (with adaptive techniques) and radiation protection.

The result was a lively, forward-looking discussion that underscored both the scientific and social responsibilities of medical physicists in the years ahead.

Spain: Curie Day and the Celebration of Young Talent

Figure 2. Curie Day in Spain.

In Spain, the Spanish Society of Medical Physics (SEFM) celebrated its traditional "Curie Day" in Madrid, an event organised by the Young Committee and Executive Board to bring together residents and professionals for a day of learning, debate, and networking (Figure 2).

The one-day meeting showcased research and innovation across the spectrum of medical physics. Current PhD students presented work on PET detector development, AI in proton therapy, and FLASH radiotherapy. A creative highlight was the "226 seconds" contest, where residents presented their projects within a strict time limit: this year's winner, Aitor Gorrotxategi, impressed the audience with his prostate brachytherapy phantom.

New trends in nuclear medicine were discussed from a multidisciplinary and multilevel viewpoint, connecting radiopharmaceutical chemistry to clinical trial insights. A debate followed on the current legal framework and professional status of clinical medical physicists in Spain, a serious topic delivered in a surprisingly interactive way.

The event also encouraged international collaboration, with sessions dedicated to exchanging experiences and exploring career development after residency. The final talk offered an overview of research opportunities and professional pathways before the day ended with a medical physics trivia competition. The success of this event was likely linked to the attention given to the young generation beginning their careers in medical physics.

Portugal: AI, Connection, and the Human Side of Physics

Although the International Day of Medical Physics is officially celebrated on 7 November, this year in Portugal it was marked on 8 November during the Annual Meeting of Medical Physicists organised by ApFisMed, the Portuguese Association of Medical Physicists (Figure 3).

Figure 3. The ApFisMed community celebrating the IDMP 2025, Portugal.

The morning began with a team-building session centred on communication, collaboration, and self-reflection. Participants exchanged thoughts on books, films, and even imaginary superpowers, turning a simple icebreaker into a dialogue about what unites physicists beyond equations.

The afternoon shifted focus towards the future of medical physics, exploring innovation and artificial intelligence in healthcare. The first presentation, *Pathways in Medical Physics: Opportunities from Clinic to Company*, highlighted the versatility of medical physicists across academia, clinics, and industry, and called for new models of certification that adapt to evolving professional contexts.

This was followed by a talk on AI applications in nuclear medicine, featuring cutting-edge work in functional segmentation and deep learning applied to whole-body and brain imaging, oncology, and neurodegenerative diseases (where, intriguingly, clinicians often agreed more with AI predictions than with each other).

Finally, a session on radiomics addressed the challenge that fewer than 0.5% of radiomic signatures are currently used in clinical practice and emphasised the need for more diverse, global datasets to improve translation to the clinic.

The meeting concluded with an important message: medical physics is not only about precision and innovation; it is also about people. As participants reflected on the day, they were reminded that the human spirit of curiosity and care remains the true driving force behind every technological advance.

A Shared Vision

Across Italy, Spain, and Portugal, this year's celebrations of the IDMP offered a mosaic of ideas, innovation, and inspiration. From AI and radiomics to theranostics and quality assurance, from cross-border research to human connection, medical physicists reaffirmed their role at the crossroads of science, technology, and humanity.

As Marie Curie once said, "Nothing in life is to be feared; it is only to be understood." On this International Day, we are reminded that understanding—scientific and human—remains the essence of what it means to be a medical physicist.

Virginia Piva, Medical Physics Resident at Niguarda Hospital, Milan, holds an MSc in Applied Physics from the University of Milan. Her interests include radiotherapy advances and clinical AAI applications. She promotes public understanding of medical physics through science communication and joined the C&P Committee in 2024.

Two-Day Celebration of International Day of Medical Physics in Greece

Figure 1. Organising committee of the National Symposium on Proton Therapy: K. Platoni, E. Efstathopoulos, V. Kouloulias (NKUA, Greece), and J. M. Mertz (UPenn, US).

In celebration of International Day of Medical Physics, Greece hosted two major events in Athens on 7–8 November 2025, highlighting advances in proton therapy and radiation protection. The 1st National Symposium on Proton Therapy took place on 7th of November at the University of Athens. Organised by the Department of Applied Medical Physics, School of Medicine, NKUA, and co-organised by the Hellenic Association of Medical Physicists (HAMP) and the University of Pennsylvania (UPenn), the Symposium attracted over 200 participants, including medical physicists, healthcare professionals, scientists, engineers, and students.

Eight expert speakers delivered engaging presentations on the basic principles of proton therapy, current clinical practices and benefits, future developments and innovations, and the challenges of implementing proton therapy in Greece. The event opened with greetings from Professors James M. Mertz (UPenn, US), E. Efstathopoulos (NKUA, Greece), and V. Kouloulias (NKUA, Greece). Mr George Patatoukas (Medical Physicist, Greece) introduced the Basic Principles of Proton Therapy, followed by a discussion led by Professor Vasilis Kouloulias and Associate Professor Kalliopi Platoni (NKUA, Greece) on why, when, and by whom proton therapy could be implemented in Greece.

Professor James M. Mertz delivered two talks on the Current Practices and Advantages of Proton Therapy and on Clinical Applications, Future Developments, and Technological Innovations. Mr Yiannis Pantalos (Medical Physicist, Greece) explored the technical and economic aspects of establishing proton therapy in Greece, prompting a lively discussion among attendees. The Symposium concluded with Mrs Soffie Gillies (IBA) presenting Future Perspectives of Proton Therapy within the integrated framework of Radiation Oncology. The overall consensus was that Greece is now equipped to offer proton therapy locally, enabling patients who previously had to travel abroad to access this advanced treatment. The country has the expertise and resources to establish the first proton therapy centre in the southern Balkans.

The celebrations continued on 8 November with a workshop on Modern Approaches to Radiation Protection from Medical Radiation Exposures, held at the Medical School of Athens. Organised by HAMP and accredited by the European Board of Accreditation in Medical Physics (EBAMP) as a CPD event for Medical Physicists at EQF Level 7, the workshop awarded participants 11 CPD points. Over 160 medical physicists and radiation protection experts attended, including early-career colleagues and students.

Twelve experts presented on the Basic Principles of Radiation Protection and modern practices and challenges across multiple applications, including radiodiagnosis, interventional radiology, radiotherapy, nuclear medicine, and dental imaging. Representatives from the Greek Atomic Energy Commission reviewed the national legislative framework. Sponsors Mediray and Raymed delivered presentations on the use of Optically Stimulated Luminescence Dosimeters and the Nova-X Radiation Protection System, respectively. The workshop concluded with an insightful presentation on the biological effects on the foetus following maternal exposure to ionising radiation.

Figure 2. High participant turnout at the event.

Together, these events provided a comprehensive overview of current developments in proton therapy and radiation protection in Greece, reflecting both the country's readiness to adopt cutting-edge treatments and its commitment to maintaining high standards of safety and professional development in medical physics.

Kyriakos Kokkinogoulis is an Applied Physicist and Medical Physics trainee at NKUA, Greece, focusing on external radiotherapy. His Master's thesis investigates stereotactic radiotherapy for functional disorders using the Virtual Cone Technique on a LINAC. Previous research explored theragnostic applications of nanoparticles combining photothermal therapy with Cerenkov radiation.

Maria Giannopoulou is a Medical Physics trainee at NKUA, Greece. Her Master's thesis compares VMAT and Dynamic Conformal Arc therapy for single-isocenter stereotactic radiotherapy of brain metastases. Her earlier research involved Raman spectroscopy of saliva and Surface-Enhanced Raman Spectroscopy (SERS) using gold nanoparticles.

SMRD2: Highlights from the Second Symposium on Molecular Radiotherapy Dosimetry, Athens

A few months after the Symposium on Molecular Radiotherapy Dosimetry: The Future of Theragnostics, held in Athens on 9–11 November 2023, we wrote a short report in EJMP EFOMP's Corner [1], noting that this could be the first of a series. This ambition has now become a reality, and we received the green light to organise the second edition. Our originally small community of researchers in molecular radiotherapy (MRT) dosimetry continues to expand, with new developments being reported regularly. After two years, the task appeared challenging but feasible, and attendance and abstract submissions would provide a good measure of expectations. With 225 registrations (compared with 180 for the first edition) and 125 abstracts received (vs 80 in edition 1), SMRD2 clearly addressed a need within the community. We are also particularly proud to note registrations from 32 countries across Asia, Europe, the Middle East, and North and South America.

Figure 1. EFOMP and Sister Society (AAPM, EURADOS, EANM, and SNMMI) representatives.

Based on feedback from the first edition, it was decided to hold the meeting in the same city—Athens—not only to benefit from its wonderfully rich cultural and historical environment, but also to continue the fruitful partnership with the Hellenic Association of Medical Physics (HAMP) as meeting hosts. The Athens War Museum proved to be an excellent venue, accommodating the larger audience. While its name may evoke certain connotations, the choice of location was in no way intended as a metaphor for the occasional challenges encountered in advocating for dosimetry as an integral component of clinical MRT!

The first edition was primarily focused on Europe, partly due to the parallel publication of EFOMP Position Statement No. 19 [2]. For this second edition, we aimed for broader participation and reached out to our sister societies—scientific societies with an interest in MRT dosimetry. This led to the endorsement of SMRD2 by the American Association of Physicists in Medicine (AAPM). In addition, the AAPM Radiopharmaceutical Subcommittee, EANM Dosimetry Committee, SNMMI MIRD Committee, and EURADOS each organised sessions,

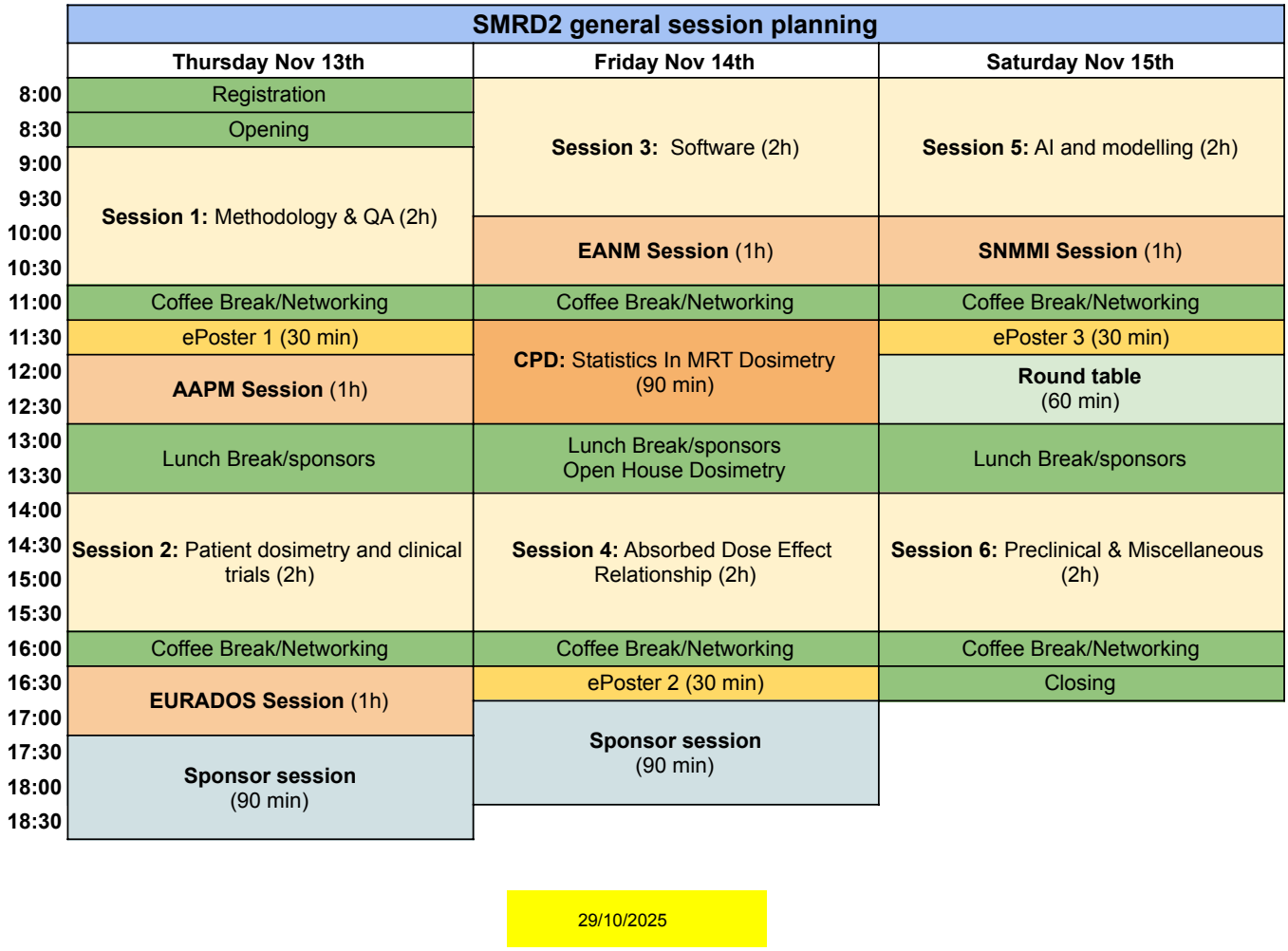


Figure 2. Overview of the SMRD2 programme.

providing updates on their activities related to MRT dosimetry and invited talks (Figure 1). This enriched the programme and increased its appeal.

From 125 abstracts, we selected 60 oral presentations (10 per session) and 50 ePosters. The review process was anonymous, with each abstract evaluated by three reviewers using a well-defined and agreed-upon evaluation template.

The sessions were designed based on the submitted abstracts, resulting in only minor changes compared to the initial plans announced in the Spring 2025 EMP News [3]. The six sessions reflected different aspects of the field's evolution:

- Methodology and quality assurance
- Patient dosimetry and clinical trials
- Software
- Absorbed dose–effect relationship
- Artificial intelligence and modelling
- Preclinical and miscellaneous

In addition, a CPD course in Statistics was held, using examples from the MRT dosimetry field. The programme also included a round-table discussion on *"Developing an agreed pathway to individual optimisation of nuclear medicine therapy"*. An open-house dosimetry software session was held as well, allowing software producers time for demonstrations.

Following feedback from the first edition that the programme was very interesting but dense, we aimed to design a somewhat less dense schedule for edition 2. Admittedly, despite increasing the

duration from 2.5 days to 3 full days, we did not fully succeed—the numerous interesting submissions and exciting approaches were simply too tempting!

Invited talks were recorded and will be available on the EFOMP eLearning platform. The abstract book is currently being finalised and will be made available from the SMRD2 web pages. A special issue of Physica Medica will also be produced, featuring full articles for the 10 best-ranked abstracts.

EFOMP wishes to thank the sponsors of this event (page 91), the organising and scientific committees, and all participants for a pleasant and rewarding few days in Athens!

References:

[1] Bardiès M, *et al.* Symposium on molecular radiotherapy dosimetry: The first of a series? Phys Med. 2024 Apr;120:103328. doi: 10.1016/j.ejmp.2024.103328. Epub 2024 Mar 17. PMID: 38498956.

[2] Sjögreen-Gleisner K, *et al.* EFOMP policy statement NO. 19: Dosimetry in nuclear medicine therapy - Molecular radiotherapy. Phys Med. 2023 Dec;116:103166. doi: 10.1016/j.ejmp.2023.103166. Epub 2023 Nov 4. PMID: 37926641.

[3] Sjögreen-Gleisner K. EFOMP 2nd Symposium on Molecular Radiotherapy Dosimetry: The Future of Theragnostics (SMRD2). EMP News Spring 2025, Pages 87-88.

Manuel Bardiès is a Senior Scientist at INSERM, France. He earned his PhD in Radiological Physics in 1991 at Université Paul Sabatier, Toulouse. Since 1992, he has led nuclear medicine dosimetry projects in Nantes, Toulouse, and now at the Montpellier Institute for Cancer Research. He is the convenor and current chair of SIGFRID.

Pablo Mínguez Gabiña (PhD, Lund University) is a senior medical physicist at Gurutzeta/Cruces University Hospital, Barakaldo, Spain, and a part-time professor at the University of the Basque Country, Bilbao. He serves as Vice-Chair of the SIGFRID Steering Committee.

Katarina Sjögreen Gleisner is a Full Professor at Lund University, Sweden. She earned her PhD in Radiation Physics in 2001, focusing on image processing in molecular radiotherapy. She became senior lecturer in 2011 and full professor in 2017. She is the Secretary of SIGFRID.

SMRD 2025 Sponsors

Highlights from SMRD2 in Athens: A Young Researcher's Perspective

Earlier this November, I had an amazing opportunity to attend the 2nd Symposium on Molecular Radiotherapy Dosimetry (SMRD2) in Athens, organised by EFOMP. It was my first international scientific conference as a presenter, so I arrived with a mixture of excitement and curiosity, and left with a wealth of new ideas, questions to investigate, warm memories, and a genuine sense of belonging to the scientific community.

At the symposium, I was honoured to present our recent work from the University Medical Centre Groningen (UMCG) on population-based pharmacokinetic modelling of Zr-89-labelled antibodies using non-linear mixed-effects (NLME) approaches. This project has been a major part of my research journey, and sharing it for the first time in front of a much larger audience felt both important and symbolic. The presentation room was full of engaged researchers, and I was deeply grateful for the warm and supportive atmosphere.

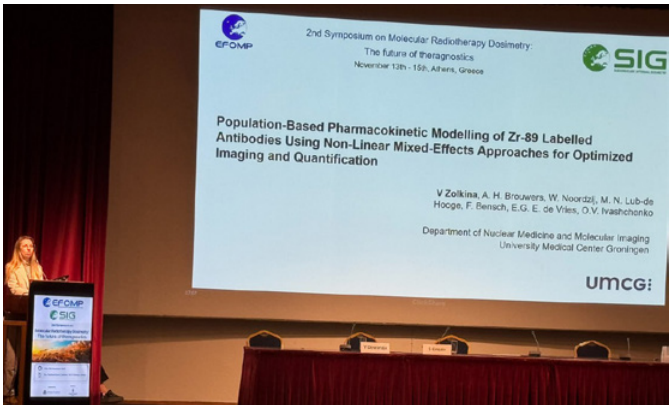


Figure 1. During my oral presentation at SMRD2, I shared our results on NLME modelling of Zr-89 antibody biodistribution.

What impressed me most were the discussions that followed. People asked thoughtful questions about biological variability, modelling strategies, and the future potential of immuno-PET. As a young researcher, it was incredibly motivating to see others interested in a topic I am so passionate about.

My interest in antibody imaging actually began not with equations, but with the biological mechanisms that show how tracers behave in the body. An example of this mechanism is illustrated in Figure 2. Understanding these mechanisms helps me make modelling decisions, interpret interpatient variability, and see beyond curves and parameters.

Figure 2. Illustration of the PD-1/PD-L1 pathway mechanism, highlighting the biological background behind tracer behaviour.

During my talk, I also explained why naïve pooled modelling is often insufficient for antibody uptake data, where variability is large and meaningful. NLME population modelling offers a far better approach to quantify differences between

patients and produce realistic predictions, as illustrated in Figure 3.

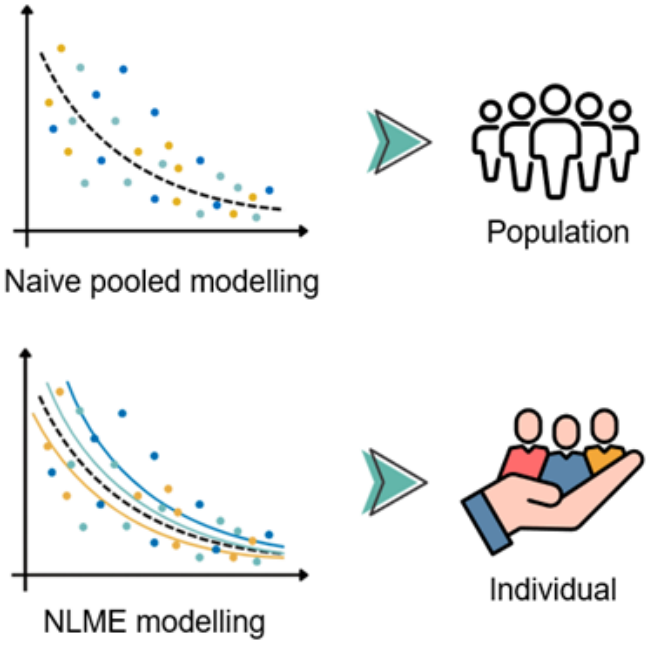


Figure 3. Conceptual comparison of naïve pooled modelling and population NLME modelling with individual prediction, showing why NLME approaches provide a more reliable framework for heterogeneous antibody data.

To demonstrate how the model performs on unseen data, I presented two small visual examples in Figure 4. These plots capture what I find most rewarding about modelling: the moment when mathematical workflow meets biological reality and they align beautifully.

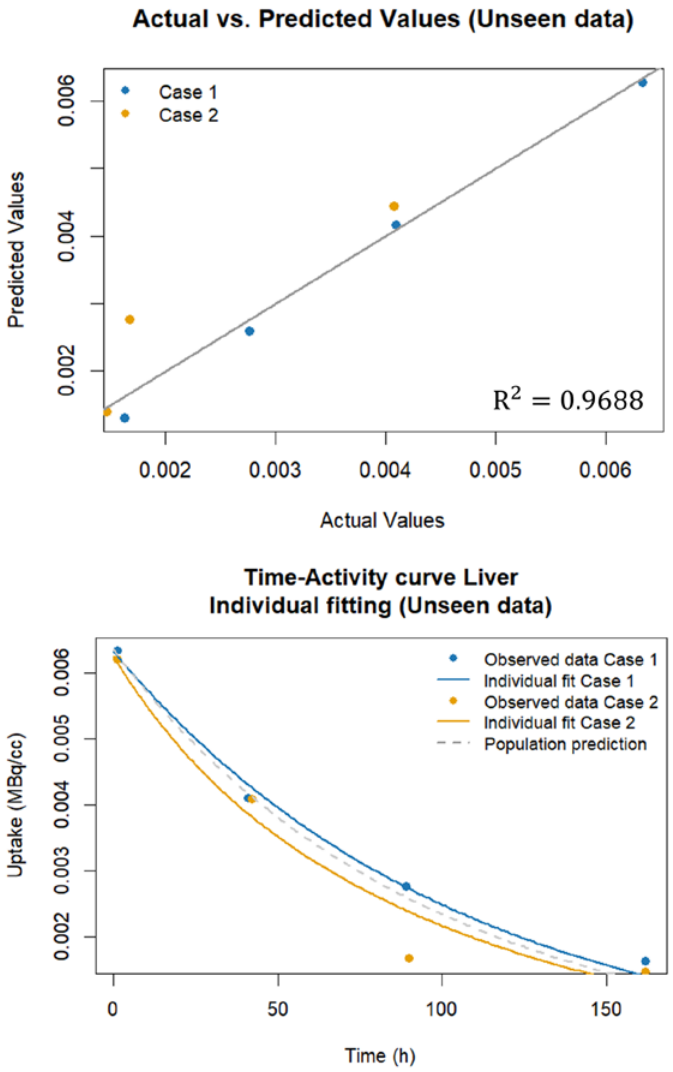


Figure 4. Observed vs population-predicted activity values (R^2 = 0.967) for unseen data (left). Time-activity curves for two unseen liver datasets, showing observed points, individual fits, and the population prediction (right).

Despite the intensive scientific programme, I made time to explore Athens the day before the symposium and after the final sessions. The warm light, narrow streets, views of the Acropolis, and peaceful cafés added something special to the experience. Meeting other young researchers during coffee and lunch breaks made the week even more meaningful. We shared our struggles, ambitions, and excitement about the field. These conversations helped me feel scientifically connected.

SMRD2 was not just a symposium for me. It was a moment that showcased how far the field has come and how much more I wish to learn as a researcher. I returned home with renewed motivation, new collaborations, and a deeper appreciation for the community behind nuclear medicine.

I am grateful to my supervisor, Oleksandra Ivashchenko, and my colleagues at UMCG, as well as the organisers of SMRD2 for creating such a welcoming event. I hope to return with new results to share, and with the same excitement that Athens sparked in me.

Figure 5. The Acropolis at sunset – a perfect start before a day of science.

Veronika Zolkina is a biomedical engineer and junior researcher at the University Medical Centre Groningen, The Netherlands. She works on quantitative PET imaging, pharmacokinetic modelling of radiolabelled antibodies, and personalised dosimetry. She is enthusiastic about advancing quantitative methods for personalised molecular radiotherapy.

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First Time at EANM'25 (and definitely not the last)

From the 4th to the 8th of October, I had the incredible opportunity to attend my very first European Association of Nuclear Medicine (EANM'25) Congress, held in the vibrant city of Barcelona. As someone relatively new to the field, stepping into one of the largest and most prestigious gatherings in nuclear medicine was both exciting and overwhelming.

The moment I arrived at the convention centre, I was struck by its immensity—the vast halls, the countless professionals bustling around, and the overall sense that I had entered another dimension entirely. The venue was thoughtfully divided into several key areas. The main hall hosted numerous stands (Figure 1), including that of the European Federation of Organisations for Medical Physics (EFOMP), where I proudly received a bright yellow EFOMP pin that I wore throughout the congress. Then there was the EANM Village, where several scientific sessions took place, including the launch of two brand-new EANM journals and the Young Professionals Lounge, a welcoming space dedicated to networking and knowledge exchange among early-career participants. Finally, the industrial exhibition area showcased the latest technological innovations in the field, featuring real-size cyclotrons, gamma cameras, and PET/CT systems, among many other fascinating products.

Each day offered a packed programme of lectures, workshops, and interactive sessions, distributed across various rooms such as the impressive auditorium and the Arena room. With multiple sessions often running simultaneously, it was always a challenge to choose where to go. Still, I did my best to absorb as much as possible, particularly in areas close to my interests—medical physics, radiation protection, and dosimetry..I attended a wide range of talks, from SPECT Quantification in Therapeutic Applications to thought-provoking debates like *"Will Alpha Therapy Be the Main Radionuclide Therapy Approach in the Future?"* and *"Quantitative Imaging: What's the Point?"* (Focus on Kinetic Modelling). Some sessions explored very practical questions, such as *"What Would You Do If...?"*, which covered real-life radiation protection issues in unusual clinical situations. I remember being surprised to learn that airport detectors can pick up tiny levels of radioactivity even from diagnostic exams! Other

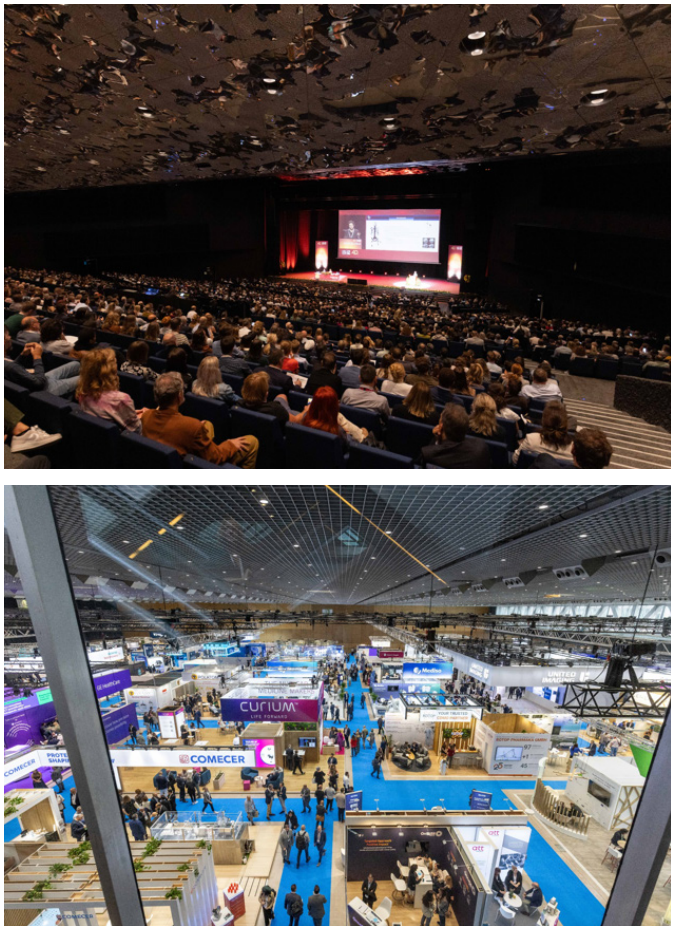


Figure 1: Main auditorium and industrial exhibition showing the scale of the EANM'25 venue.

highlights included discussions on Challenges in Dosimetry of Alpha-Emitters, Protocol Optimisation in Imaging, Low Dose Imaging in Paediatrics, and many others.

Beyond the scientific content, one of the most rewarding aspects of EANM'25 was meeting new colleagues and connecting with professionals from all over the world. Everyone I spoke with was incredibly welcoming, and I quickly felt a sense of belonging within the community. Whether during coffee breaks, while exploring the exhibition, or just wandering between sessions, every interaction was an opportunity to learn and share experiences.

Of course, I also made sure to explore the industry booths and talk with company representatives about their innovations and research. These conversations offered valuable insights into how technology is shaping the future of nuclear medicine. And amidst all the intensity of the congress, there were also moments to relax and have fun—like when I found myself playing a friendly game of mini-golf at one of the stands (Figure 2)! To my delight, the people running it were Portuguese, and the last hole of the game was designed to look like the 25th of April Bridge in Lisbon—a lovely and unexpected touch of home.

Figure 2. Playing mini-golf with colleagues — a fun break during EANM'25.

Looking back, attending EANM'25 was an unforgettable and enriching experience. I came away not only with new knowledge and professional connections but also with renewed motivation and curiosity about the field. For anyone starting their journey in nuclear medicine, I cannot recommend this experience enough. It truly opened my eyes to the breadth, innovation, and community that define this fascinating area of science.

Rita Albergueiro is a Medical Physics resident specialising in Nuclear Medicine at the Local Health Unit of São João in Porto, Portugal. She holds a master's in medical physics and collaborates with the IPO Porto Research Centre in projects on Medical Physics, Radiobiology, and Radiation Protection. She joined EFOMP's C&P Committee in 2025 and is one of the local organisers for the ESMPE School for Radiation Biology.

Proton Therapy School in Prague: Building Knowledge and Connections

Figure 1. Group photo of attendees at the EFOMP School for Proton Therapy Physics 2025.

The EFOMP School for Medical Physics Experts (ESMPE) on Proton Therapy Physics took place from 10–12 July 2025, organised in collaboration with the Particle Therapy SIG and the Czech Association of Medical Physics (CAMP). This edition brought together participants onsite and online, continuing EFOMP's mission of providing accessible and high-quality education for the medical physics community.

Over two and a half days, the school offered a comprehensive introduction to the essential aspects of proton therapy. Topics ranged from proton dosimetry and treatment planning to advanced imaging, motion management, and the commissioning and validation of new centres. Emerging technologies such as FLASH radiotherapy and spatially fractionated radiotherapy (SFRT) were presented, highlighting future directions for clinical implementation. The programme combined structured lectures, interactive discussions, and—on the final day—a hands-on component at the Proton Therapy Center Czech Ltd., which allowed participants to connect theory directly with practice.

The school was delivered by an experienced international faculty, ensuring a rich balance between the scientific foundations of proton physics, the clinical workflow, and real-world case examples.

Sessions ranged from fundamental topics such as proton dosimetry and treatment planning to advanced areas including adaptive radiotherapy, Monte Carlo dose calculations, and proton therapy for paediatric patients.

Alongside the scientific content, the school was also about people and perspectives. Among the participants was Joana Leitão, a Portuguese PhD student at the German Cancer Research Center, who described the atmosphere as welcoming and relaxed:

"Most attendees were experienced medical physicists or RTTs beginning to work in proton therapy. This meant the talks were clear and accessible, and I felt comfortable asking even my more basic questions."

Among the highlights, she singled out the lectures by Richard Amos, particularly his reflections on establishing a proton therapy centre in central London—an endeavour that once seemed unthinkable but was ultimately realised through determination and teamwork.

For Joana, the most valuable aspect of the programme was the strong connection between science and clinical application. As she considers a career in the clinic, she found that the sessions struck the right balance between theoretical background and practical insights.

Networking also played a central role. Coffee breaks and the social dinner provided space for informal exchanges, allowing participants to share professional experiences and compare training pathways across Europe. Although Joana was the only Portuguese participant onsite, she valued the chance to learn how colleagues in other countries enter the profession and contribute to the growing proton therapy field.

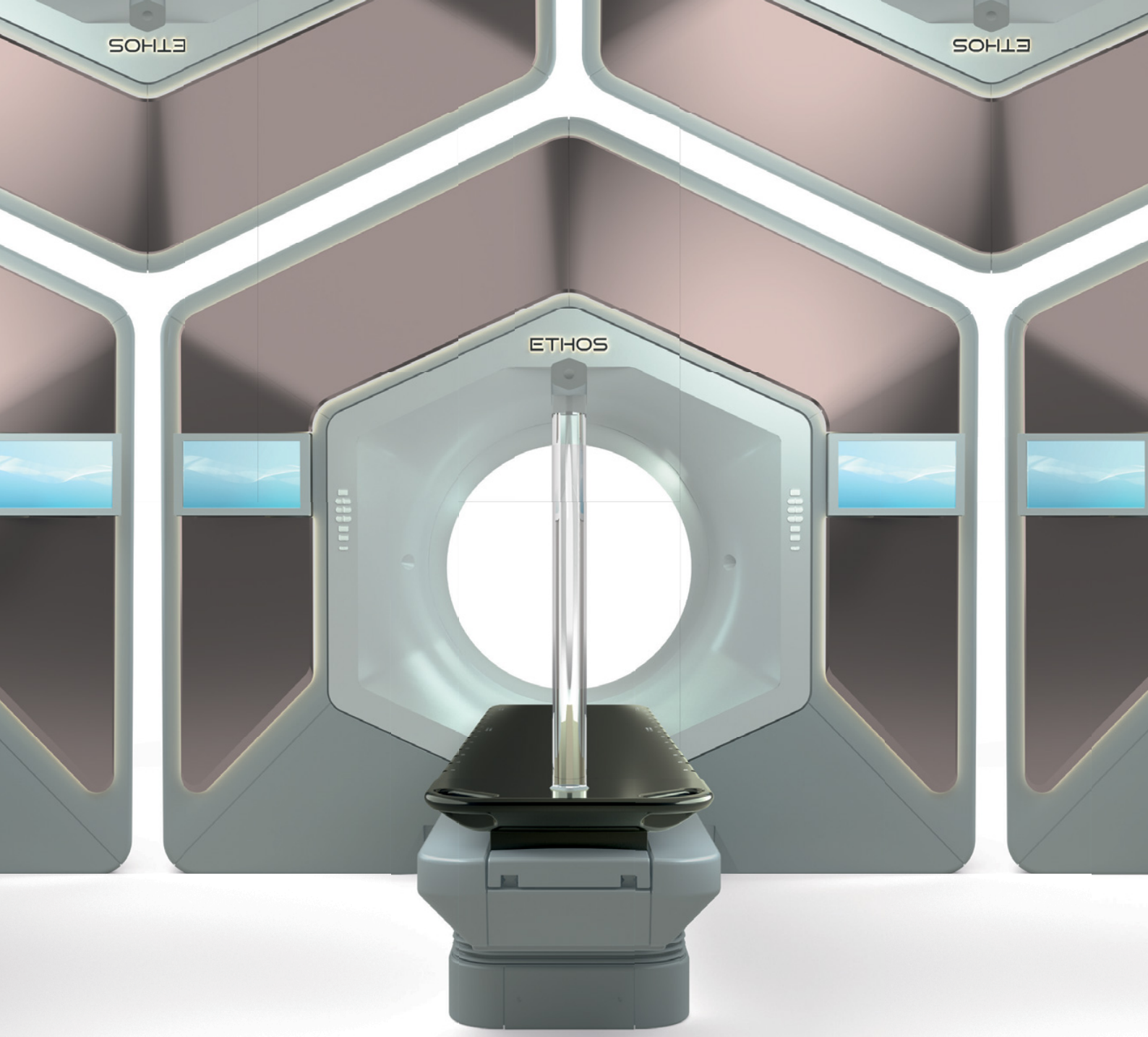
She reflected that, even without attending the hands-on session at the Proton Therapy Center, the school was a source of fresh perspectives and motivation:

"The medical physics field in Europe is growing, and we should all work to ensure that our voices are represented alongside those of physicians."

Beyond the formal lectures, Joana also stressed how the school helped her reconnect with core concepts while gaining perspective from her peers' work. Listening to different professional experiences provided inspiration, and she described attending a summer school as "a great idea if you need a boost of ideas".

The 2025 edition of the EFOMP School confirmed the importance of these events as a platform for continuous professional development, scientific exchange, and community building. By fostering both expertise and collaboration, the school contributed to strengthening the role of medical physicists within multidisciplinary cancer care and to shaping the future of proton therapy in Europe.

Rita Albergueiro is a Medical Physics resident specialising in Nuclear Medicine at the Local Health Unit of São João in Porto, Portugal. She holds a master's in medical physics and collaborates with the IPO Porto Research Center in projects on Medical Physics, Radiobiology, and Radiation Protection. She joined EFOMP's C&P Committee in 2025 and is one of the local organisers for the ESMPE School for Radiation Biology.



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Strengthening Practice in Interventional Radiology: The EFOMP School in Zagreb

Figure 1. 2025 ESMPE for Interventional Radiology Practices – Group photo of participants.

The European School for Medical Physics Experts (ESMPE) on Interventional Radiology Practices took place from 18–20 September 2025 in Zagreb, Croatia, organised by the European Federation of Organisations for Medical Physics (EFOMP) in cooperation with the Croatian Association of Medical Physics (CROMPA).

Hosted at the School of Public Health "Andrija Štampar", the event combined onsite and online participation in a dynamic hybrid format, ensuring wide accessibility while promoting personal interaction. The programme offered a balanced mix of lectures, case discussions, and industry presentations, guiding participants through the core principles and clinical applications of interventional radiology.

Over three days, experts addressed topics such as radiation effects, patient and skin-dose management, quality control of X-ray systems, image-quality optimisation, and occupational exposure under European regulations. Various procedures from cardiology to neuroradiology were reviewed, giving participants an integrated view of current practice and technology.

Among the onsite participants was Dr Ildefonso Pinto, Medical Physics Expert and President of the Portuguese Medical Physicist Association

(apFisMed), who shared his reflections on the course and its relevance to his daily work.

"I have a particular interest in this sub-area of Radiology, as it is very important for my work," he explained. "In addition, ESMPE courses tend to be geared towards the training needs of physicists."

He believes that initiatives like ESMPE are crucial for professional growth across Europe.

"These courses play a key role in meeting the training needs of MPEs while enabling the sharing of knowledge and experience among participants—especially those attending in person."

For Dr Pinto, the Zagreb edition stood out for its multidisciplinary approach, particularly the sessions presenting the clinicians' perspective, which helped medical physicists better understand procedural objectives.

"The module on patient-dose management was the one I was most curious about," he noted. "But hearing clinicians explain their goals was equally fascinating—it's a different perspective from what we are used to."

When discussing today's main challenges, he highlighted patient-dose management as central to interventional radiology.

"It is essential for identifying situations with potential biological effects," he said. "At the same time, ensuring that radiological equipment functions correctly through quality-control testing is equally vital. Controlling both components helps minimise risk."

While praising the course's strong scientific content, he also expressed his wish for more hands-on sessions in future editions.

"You learn better by doing than by watching or listening," he admitted. "But I understand how difficult it is to organise practical sessions due to material and logistical constraints."

The insights he gained are already being applied in his work in Portugal, where he continues to monitor equipment performance and patient dose levels. The course, he said, was an opportunity to reinforce and refine his skills in these key areas.

Beyond the academic content, Dr Pinto highlighted the networking opportunities as one of the school's greatest strengths.

"Even during breaks, it was an opportunity to exchange ideas and experiences, as well as expand your network of contacts".

Figure 2. Ildefonso Pinto with Efi Koutsouveli, EFOMP President, and João Seco, Chair of the School, during the ESMPE "Interventional Radiology" course in Zagreb.

He also emphasised the importance of European collaboration:

"For those who want to keep up with the direction that medical physics, standards, and technology are taking, sharing knowledge and working together is essential."

Reflecting on his overall experience, he described the event as both educational and welcoming.
"In addition to learning from the course itself, I found the hospitality and integration from the organisers very rewarding."

His advice to other medical physicists was straightforward:

"They should always take advantage of any opportunity to participate—whether online or onsite. I definitely recommend onsite whenever possible."

More than a training event, the EFOMP School in Zagreb reaffirmed the value of continuous learning and collaboration within the medical physics community.

Rita Albergueiro is a Medical Physics resident specialising in Nuclear Medicine at the Local Health Unit of São João. She holds a master's in medical physics and collaborates with the IPO Porto Research Centre in projects on Medical Physics, Radiobiology, and Radiation Protection. She joined EFOMP's C&P Committee in 2025.

Ildefonso Pinto is a Medical Physicist working mostly in Radiology and Radiation Protection at a private institution and collaborates with several hospitals as an advisory MPE. Currently is president of the apFisMed (Portuguese Medical Physicist Association) and participates at EFOMP's PM Committee.

2025 DGMP Annual Congress in Berlin, Germany

More than 950 medical physicists gathered in Berlin from 24th to 27th September for the 56th annual congress of the German Medical Physics Society DGMP at the Henry-Ford-Lecture building of the Free University of Berlin. Beautiful sunshine made the start of this meeting especially bright as one of this year's congress special topics was dedicated to biomedical optics and the treatment of eye tumors for the first time at DGMP congresses in recent years (figure 1).

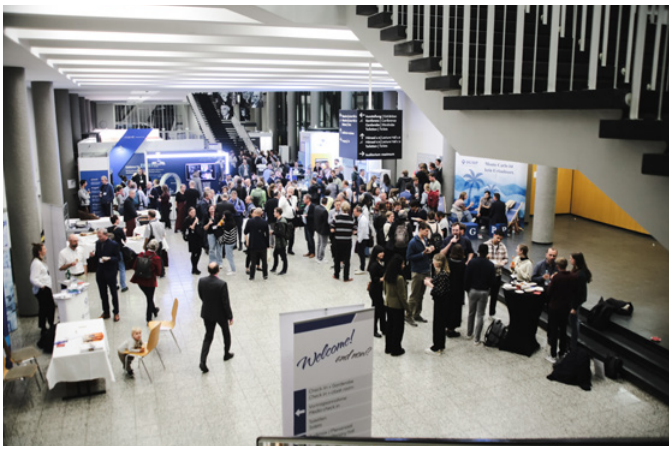

Figure 1. Meeting point and industry exhibition of the congress in the Henry-Ford-Lecture-Building of the Free University of Berlin [1].

Eye tumor sessions

Berlin houses an ocular proton therapy facility, a collaboration between Charité – Universitätsmedizin Berlin and Helmholtz-Zentrum Berlin für Materialien und Energie, which is Germany's first proton therapy facility and has now treated over 5000 patients. Besides an expert session, where the fundamentals of ocular tumours with various radiation therapies were discussed, a special scientific session had the focus on current developments. Furthermore, there were refresher courses on topics such as ocular tumour diagnosis, side effects of radiation treatment, and imaging for treatment planning of intraocular tumors. On Friday afternoon, he congress' president Andrea Denker and her colleague Jens Heufelder organised the possibility to visit the eye tumour therapy near the "beautiful lake Wannsee" of Berlin. 85 people had registered for this event and were shown the proton therapy facility in small groups. There was the possibility of discussions while having drinks, before the buses returned to the conference place.

Biomedical optics sessions

Alongside X-rays and MRI, optics is establishing itself as a third window into diagnostics. In two sessions, one organized jointly with the German Society of Biophotonics and Laser Medicine (DGLM), in total 16 presentations were held. The abstract session "Biomedizinische Optik" (Biomedical Optics) was dedicated double, to research on basic laser-tissue mechanisms as well as to novel imaging methods and applications. The session featured 6 talks and one poster presentation of the latest results on basic mechanisms of laser surgery, i.e. laser-induced plasma formation and cavitation, and mechanisms of nonlinear photodamage. Further talks addressed laser-assisted therapy in venous disease and brain tumor as well as diagnostic techniques like OCT and HSI for skin and brain tumor applications.

The technical meeting, jointly organized with the DGLM organized “Laser technologies in healthcare: Advances and applications”, had a special focus on nonlinear imaging for medical applications, with 4 talks covering the latest developments in this dynamic field. Four further presentations gave an overview over laser applications in medicine, reported on recent development in refractive surgery, and featured photodynamic therapy (PDT) as a possible solution for global health challenges and a therapy option for brain tumors. The session closed with a talk that addressed hurdles, strategies, and successes in clinical translation.

Being based on physics, engineering, and medicine, laser medicine and biomedical optics have much in common with classical medical physics, but are currently underrepresented in the German Society for Medical Physics. Following the last year's success of the Winter School in Pichl, Austria, the two sessions gave an insight into the highly active field of the application of non-ionizing radiation in medicine and encouraged the exchange between the societies.

Audiology sessions

The audiological sessions of the conference focused on synergistic effects of optics and acoustics in Hearing Technologies. Recent advances in combining optical and acoustic methods have opened new perspectives for hearing restoration and diagnostics. L. Jablonski (Göttingen) presented progress in optogenetic hearing restoration, which aims to overcome the spectral limitations of conventional electrical cochlear implants (eCIs). By rendering auditory nerve cells light-sensitive and stimulating them with microscale light emitters, optical cochlear implants (oCIs) achieve spatially precise activation and near-physiological firing rates, as demonstrated in rodent models. Ongoing developments of flexible GaN-based LEDs and optimized microlens designs pave the way for future human applications.

J. Laufer (Halle-Wittenberg) discussed molecular and functional photoacoustic imaging, a hybrid technology combining optical contrast with ultrasonic spatial resolution. It enables visualization of vascular networks, oxygen saturation, and molecular contrast agents, with emerging applications in preclinical and clinical studies. N. M. Burmeister et al. (Saarbrücken/Homburg) reported on laser hearing aids that exploit the optoacoustic effect to generate sound through pulsed light absorption. A first-in-human study demonstrated accurate perception of tones and melodies, highlighting potential for future miniaturized optical hearing systems.

Figure 2. Impression of the vivid discussion of the audience with the speakers at the sessions. [1]

Finally, T. Kirchner (Halle-Wittenberg) presented advances in photoacoustic sensing for transcranial imaging, developing optical sensor technologies to overcome skull-induced acoustic attenuation, advancing toward non-invasive functional brain monitoring (Figure 2).

Together, these works illustrate the powerful synergy between optics and acoustics in next-generation hearing and diagnostic technologies.

Radiotherapy and X-ray imaging sessions

A first at this year’s DGMP congress was the online pre-congress a week before that consisted of two sessions on the role of artificial intelligence in RT and radiation emergency situations and

preventive measures. The rationale for introducing this new format was to offer easy access to these topics of broader interest without parallel sessions as for the usual congress in presence. Among the RT- and imaging sessions at the congress, the sessions on cybersecurity, risk management, and FLASH-therapy were of special interest. The Early-Career-Group "jMP" of DGMP organized again a series of very interesting sessions, including a panel discussion "Quo vadis MPE" on the training of medical physicists, and in another session, selected MPEs of different fields presented their subjects to the next generation. As a special highlight of this track, a professional communication coach gave an introduction on how to catch the audience during a presentation and to effectively communicate your message to it. Since Medical Physics is a natural science profession with a considerably high fraction of females in its groups, the question on how to manage job and family life was the topic of another jMP-session. As another "first" of DGMP congresses, a professional child caring service was offered to the participants, so we could welcome the maybe (over-)next generation of Medical Physicists at Berlin.

Figure 3. Medical Physics gets even younger: Thanks to a professional child care service offered for the first time at a DGMP congress, parents could bring their children to the congress, too. [1]

Education and training were subject of another special session with an emphasis on e-learning, where the introductory talk on modern tools of Moodle by Prof. Martina Mauch from Berlin was followed by presentations of the e-learning platform E-lement by EFOMP by Danielle Dobbe, and the German DGMP-academy webinars and Moodle by Markus Buchgeister. Presentations on the master courses on medical radiation sciences at the university of Tübingen and the master on biomedical engineering at the TU Ilmenau summarized the current status of two presence courses in Medical Physics to open up a discussion on the future developments in both forms of teaching our subject.

To reach out to possible new Medical Physics students, DGMP organized again a special program for highschools and schools for medical technologists, where about 30 pupils from Berlin and Cottbus with their teachers, and another about 30 of two medical technologist courses participated for one day at the congress. After an introductory presentation on the broad field of Medical Physics, they were split up into small groups to meet and talk to medical physicists who took them to sessions and/or poster presentations.

Figure 4. Participants and winner of the Young Investigator Award session. [1]

Besides the lecture of this year's Glocker-medal awardee (highest DGMP award) Gunter Brix, the Young Investigator Award session again showed the high level of the next generation of researchers in Medical Physics. Innovations in Medical Physics always profit from the input from "classical" physics, so again we organized a dedicated session "DGMP meets DPG" together with the German Physical Society DPG. Since 2025 is the

100th anniversary of the formulation of quantum mechanics by Werner Heisenberg and coworkers at Göttingen, the first talk in this session was on the first century of quantum physics, given by Steffen Korn from Göttingen, and followed by “MARS: Photon counting CT for molecular imaging” by Anthony Butler from New Zealand. Stefanie Dencks from university of Bochum rounded the session up with her talk on "Superresolution Imaging: Ultrasound Localization Microscopy".

This year again, a CO2-compensation part was included in the congress fee, since the initiative “DGMP goes green” is also involved in the way we organize the congress and gave an update on their activities to monitor and optimize the energy consumption of the various facilities by Medical Physicists in their session, too.

The DGMP congress ended on the last day again with bright sunshine outside, and the past congress presidents Andrea Denker and Markus Buchgeister handed over the symbolic congress stick to the next organizers of the 57th DGMP congress at Bamberg.

Figure 5. The past congress presidents, Markus Buchgeister and Andrea Denker, hand over the symbolic congress stick to the next organisers of the DGMP congress 16th-19th September 2026 at Bamberg, Christian Heine (for Thomas Koch) and Mathias Dierl.

Reference

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Acknowledgement:
I gratefully acknowledge the support by Katrin Franz (Conventus Congressmanagement & Marketing GmbH).

Markus Buchgeister began in medical physics at Tübingen University Clinic in 1995 and became Professor of Medical Radiation Physics at Berliner Hochschule für Technik in 2010. He has held DGMP and EFOMP roles in communications, education, and training since 2003 and currently serves again as German EFOMP delegate.

The 13th National Congress of the Italian Association of Medical Physics

Figure 1. The joint session among young members of the italian Association of medical physics, radiation oncology, radiology and neuroradiology.

Figure 2. The handover between former president and newly elected Fabrizio Banci Buonamici

The 13th National Congress of the Italian Association of Medical Physics (AIFM) took place in Verona, hosted in the historic Palazzo della Gran Guardia on Piazza Bra. This year's motto, *"Innovating to Care: Medical Physics in the Future of Health,"* set a forward-looking tone, inviting the community to actively embrace and drive change in the field. Members of AIFM – the *"common home"* of Italian medical physics – were offered a platform to contribute with expertise, responsibility, and vision to the evolution of healthcare.

The scientific programme was rich and diverse, and the 2025 edition introduced an important novelty: two plenary symposia, organised in close collaboration with the Italian National Institute for Nuclear Physics (INFN), with which AIFM has an active cooperation agreement. This partnership strengthened the scientific dialogue and ensured high-level contributions from both communities.

The first symposium focused on Artificial Intelligence for Health, exploring algorithmic innovation, regulatory challenges, and the role of medical physicists in ensuring safe, responsible, and clinically meaningful AI deployment.

The second symposium addressed Quantum Science and Technology for Health, offering an in-depth look at emerging quantum-enabled applications in imaging, dosimetry, and medical instrumentation. The event was part of the global celebrations for the International Year of Quantum Science and Technology (IYQ 2025), promoted by UNESCO to mark the centenary of the foundational contributions of Werner Heisenberg and Erwin Schrödinger.

AIFM 2025 also placed special emphasis on early-career professionals, with several dedicated sessions organised by the Early Career Committee, coordinated by Dr Marco Felisi.

One of the highlights presented during the opening ceremony was the *"Schools Project"*: over recent months, medical physicists visited

more than 30 high schools, engaging over 4,000 students through workshops and interactive lessons to introduce the profession in an accessible and inspiring way. Around 30 early-career medical physicists, supported by senior colleagues, contributed to this highly successful outreach initiative.

At the congress, a joint Early Career roundtable brought together representatives from all Italian radiological societies – medical physics, radiology, neuroradiology, nuclear medicine, and radiation oncology (Figure 1). The discussion centred on how artificial intelligence is reshaping clinical practice and professional identities, highlighting both opportunities and challenges for the next generation. Young MPEs and MDs reflected on the evolving balance between technological innovation and human expertise, underlining the importance of collaboration, continuous education, and interdisciplinary dialogue. This exchange was not only intellectually stimulating but also symbolic of a growing, integrated vision of the radiological sciences.

Beyond scientific exchanges, early-career participants also enjoyed social activities, including a friendly team game through the streets of Verona that brought together residents and young professionals from hospitals across Italy.

A key moment of the congress was the handover between Carlo Cavedon and the newly elected President Fabrizio Banci Buonamici (Figure 2), who will lead AIFM for the 2025–2027 term. Sincere thanks go to Carlo Cavedon for the achievements of his mandate, and warm wishes to Fabrizio Banci Buonamici as he takes on the challenges ahead.

Cinzia Talamonti is Professor of Medical Physics at the University of Florence and President of the Radiographer degree course. Since 1999, she has worked at the Careggi University Hospital, focusing on advanced treatment techniques, dosimetry, imaging, and interdisciplinary research with radiotherapy oncologists.

Virginia Piva is a Medical Physics Resident at Niguarda Hospital, Milan, holding an MSc in Applied Physics. Her interests include radiotherapy advances and clinical AI applications. She promotes public understanding of medical physics through science communication and joined the C&P Committee in 2024.

Two Young European Medical Physicists Share Their Experience at IUPESM 2025 in Adelaide

The World Congress on Medical Physics and Biomedical Engineering (IUPESM 2025) was held from 29th of September to 4th of October 2025 in Adelaide, Australia, bringing together thousands of professionals and researchers from over 100 countries. Hosted at the Adelaide Convention Centre, the congress celebrated interdisciplinary collaboration and the transformative role of artificial intelligence (AI) in healthcare innovation.

A Congress Bridging Past, Present, and Future

The congress opened with a memorable ceremony that creatively bridged scientific heritage with cutting-edge technology. Through AI-driven digital reconstruction, three luminaries—Albert Einstein, Marie Curie, and Nikola Tesla—"appeared" on stage to discuss the future of science in the age of artificial intelligence. This innovative presentation embodied the congress's central theme: the convergence of technology, human curiosity, and imagination.

Throughout the week-long event, IUPESM 2025 offered an extensive scientific programme featuring parallel sessions, plenary lectures, workshops, and symposia. The technical programme covered a broad spectrum of topics including advances in radiotherapy, medical imaging technologies, digital health solutions, radiation safety, and AI-assisted diagnostics. Major themes included the integration of machine learning in clinical workflows, sustainability in healthcare delivery, and addressing global equity in medical physics education and practice.

Plenary sessions provided scientific highlights, with Dr Lars Jensen exploring *The AI Revolution in Biomedical Data Science* and Prof Simon Cherry presenting *Total-Body PET/CT:* Imaging the Dynamics of Life. These keynote presentations, alongside numerous specialised sessions, confirmed IUPESM's position as a truly global platform for knowledge exchange and innovation in medical physics and biomedical engineering.

European Contributions from University of Florence Researchers at IUPESM

Representing the University of Florence, Carlotta Mozzi and Lorenzo Lasagni (University of Florence and Meyer Children's Hospital, Florence) actively contributed to the scientific sessions with oral communications (Figure 1).

Carlotta Mozzi presented her work *"Development and validation of a robust dataset using commercial TPS and dose measurement devices for deep learning in transit dosimetry"* during the session *Dosimetry, Calibration and Computational Analysis 1*. Her study focused on the integration of AI into in vivo dosimetry using EPID systems, demonstrating how machine learning can enhance precision and treatment verification in radiotherapy.

Lorenzo Lasagni delivered an oral presentation titled *"Focal Cortical Dysplasia Type II Detection Using Cross-Modality Transfer Learning and Grad-CAM in 3D-CNNs* for *MRI Analysis"* in the session *Artificial Intelligence in Biomedical Engineering 3.* His work explored deep learning techniques

for MRI-based neurological imaging analysis, aiming to improve diagnostic accuracy for focal epilepsy while enhancing clinical interpretability through explainable AI methods.

Building Global Partnerships

Beyond its rich scientific programme, IUPESM 2025 fostered a strong sense of international community, facilitating networking opportunities and encouraging collaborative research partnerships across continents. The congress provided an ideal environment for establishing connections between established researchers and emerging professionals in medical physics and biomedical engineering.

Adelaide's welcoming atmosphere, combining urban innovation with natural beauty and cultural richness, provided an inspiring backdrop for this world-class scientific gathering, reinforcing the congress's mission to advance global healthcare through physics and engineering innovation.

Figure. Carlotta Mozzi and Lorenzo Lasagni at the IUPESM 2025 World Congress in Adelaide, Australia.

Carlotta Mozzi is a Medical Physics resident at the University of Florence, Italy. Her research interests include in vivo dosimetry, treatment verification, and the application of AI in radiotherapy.

Lorenzo Lasagni is a PhD student at the University of Florence and the Meyer Children's Hospital, Florence, Italy. His research focuses on AI-based image analysis and functional MRI (fMRI) applications in pediatric neuroimaging.

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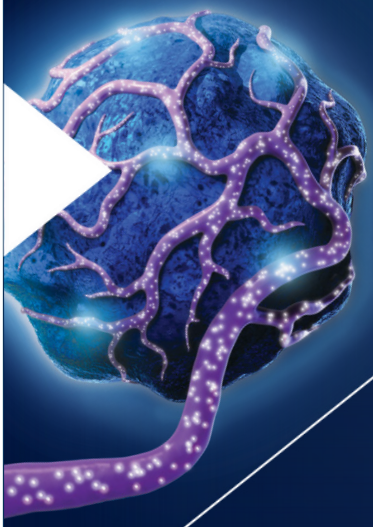

2024 PROACTIF REAL-WORLDDATA **HCC & iCC**[1]

2021 EPOCH LEVEL-1 DATA **mCRC**[2]

2021 TARGET REAL-WORLD DATA **HCC**[3]

2020 DOSISPHERE LEVEL-1 DATA **HCC**[4]

2020 LEGACY REAL-WORLD DATA **HCC**[5]

CE 0123

Abbreviations: HCC: Hepatocellular carcinoma; iCC: Intrahepatic cholangiocarcinoma; mCRC: Metastatic colorectal cancer.

References: 1. PROACTIF ClinicalTrials.gov Identifier: NCT04069468. **2.** Mulcahy MF et al. J Clin Oncol 2021;39(35):3897-907. **3.** Lam M et al. Eur J Nucl Med Mol Imaging. 2022;49(10):3340-52. **4.** Garin E et al. Lancet Gastroenterol Hepatol. 2021;6(1):17-29. **5.** Salem R et al. Hepatology 2021;74(5):2342-52.

Join Us in Porto for the ESMPE School for Radiation Biology February 2026

EFOMP, in collaboration with the Portuguese Association for Medical Physics (APFISMED) and the Department of Physics and Astronomy of Faculty of Sciences of the University of Porto (DFA/FCUP), is pleased to announce the upcoming European School for Medical Physics Experts (ESMPE) in Radiation Biology, which will take place from 19-21 February 2026 at the Faculty of Sciences, University of Porto, Portugal.

This edition of the ESMPE will provide a comprehensive foundation in radiation biology for medical physicists working in both imaging and therapy. Participants will have the opportunity to deepen their understanding of the biological effects of ionizing radiation and their implications in diagnostic and therapeutic contexts. The school will be accredited by EBAMP (European Board of Accreditation for Medical Physics) and is open to clinical medical physicists and other professionals interested in the subject (Registration link).

About the School

The 2026 ESMPE in Radiation Biology will introduce participants to the fundamental principles of radiation–tissue interaction, DNA damage and repair mechanisms, and cellular responses to radiation, including apoptosis, necrosis, and mitotic catastrophe. The curriculum will explore both deterministic and stochastic effects, as well as the molecular and microdosimetric aspects of radiation response.

Building upon these basics, the course will cover clinically applied radiobiological models, such as the Linear Quadratic Model (LQM), which is essential for understanding fractionation, radiosensitivity, and dose–response relationships.

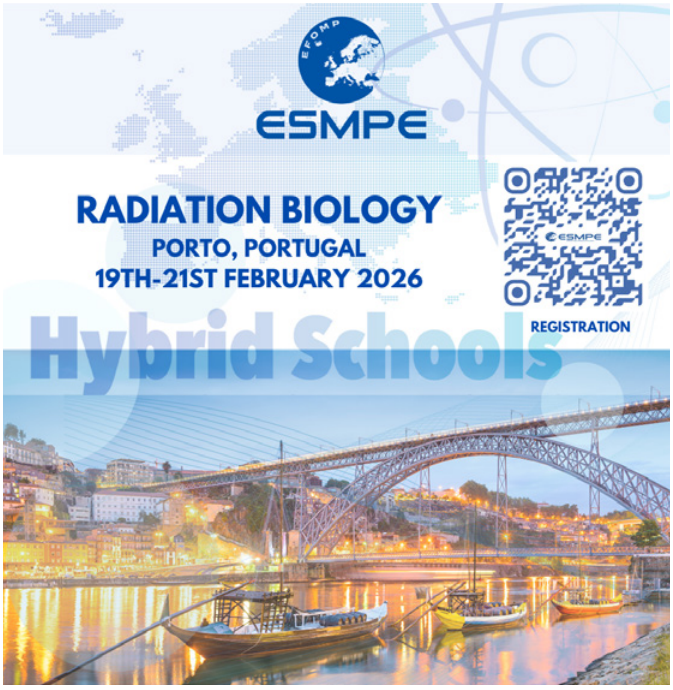

Figure 1. ESMPE on Radiation Biology - official poster.

Further topics include tissue-specific radiosensitivity, cell cycle kinetics, and the biological principles underlying hypofractionation and radiosensitization.

For therapy physicists, these concepts are vital for optimizing treatment planning, improving clinical decision-making, and enhancing patient safety. For imaging physicists, understanding radiation–tissue interactions supports dose justification, protocol optimization, and effective communication of patient risk, key to maintaining high standards of quality and safety in diagnostic practice.

In line with EFOMP's commitment to accessibility and inclusion, the Porto ESMPE will be held in a hybrid format. All lecturers will be present on-site, while participants may choose to attend

either in person or online, as all sessions will be live-streamed.

About the Venue and the City

The event will take place at Ferreira da Silva amphitheatre, at the Faculty of Sciences, University of Porto, one of Portugal's oldest and most prestigious academic institutions, renowned for its excellence in science, research, and innovation (Porto Travel Information). The University provides an inspiring academic setting in the heart of a city known for its cultural richness and historical charm.

Figure 2. Faculty of Science, University of Porto.

Porto, Portugal's second largest city, sits gracefully on the banks of the Douro River and is famous worldwide for its Port wine, historic centre (a UNESCO World Heritage Site), and stunning architecture blending medieval, baroque, and contemporary styles.

Visitors will discover a city of contrast, vibrant yet serene, traditional yet modern. The Ribeira, Porto's historic riverside area, is one of the city's most enchanting places and a must-see for any visitor. From its colourful riverfront houses and cobbled streets to the lively cafés along the Douro, the Ribeira offers the most breathtaking views of the city. Just a short walk away, the iconic Lello Bookstore, often said to have inspired J.K. Rowling during her years in Porto, invites exploration, while the majestic Dom Luís I Bridge spans the river with its sweeping iron arches. From here, one can admire the perfect postcard view of Porto's skyline, capturing the city's unique blend of history, charm, and vitality.

Known locally as the "Cidade Invicta" ("Undefeated City"), Porto is home to many architectural gems, such as the São Bento Railway Station, whose grand hall is adorned with over 20,000 azulejos (traditional blue and white ceramic tiles) depicting scenes from Portuguese history. For art lovers, the Serralves Museum of Contemporary Art and Casa da Música showcase the city's vibrant cultural scene. And no visit is complete without tasting Porto's famous francesinha sandwich or fresh seafood along the Atlantic coast.

Figure 3. Iconic sights of Porto: the Clérigos Tower, the traditional francesinha dish, and the São Bento Railway Station decorated with its famous blue and white tiles.

Beyond its cultural treasures, Porto is also a growing hub for science and technology, home to several research institutions and hospitals where medical physics and radiobiology play key roles in advancing healthcare.

A Collaborative Effort

Hosting the ESMPE School in Porto represents an important milestone for APFISMED, DFA/FCUP and the Portuguese medical physics community. It reflects the country's long standing contribution to education, research, and clinical practice in medical physics, as well as its growing role within EFOMP's European network.

The local organisers, together with the Scientific Chairs of the ESMPE School for Radiation Biolo-

gy, Prof. Joao Seco and Prof. Iuliana Toma-Dasu, along with the lecturers, aim to offer a scientifically rigorous and engaging programme within a welcoming and collegial atmosphere.

The school promises not only a high-quality educational experience but also an opportunity to connect with colleagues, share expertise, and experience the beauty of Porto.

The organisers warmly invite all medical physicists to join this inspiring event in February 2026, an occasion where science, learning, and culture come together in one of Europe's most captivating cities. EFOMP offers some reduced fees to low-income countries as well as to early career physicists within Europe. Check out the EFOMP website for more details.

Welcome to Porto, we hope to see you soon!

Rita Albergueiro is a Medical Physics resident specialising in Nuclear Medicine at the Local Health Unit of São João in Porto, Portugal. She holds a master's in medical physics and collaborates with the IPO Porto Research Center in projects on Medical Physics, Radiobiology, and Radiation Protection. She joined EFOMP's C&P Committee in 2025 and is one of the local organisers for the ESMPE School for Radiation Biology.

International Symposium on Radiation Exposure Monitoring in Medical Imaging (REM2026)

"Enhanced patient care through effective data management"

11–13 June 2026, Sofia, Bulgaria
The International Symposium on Radiation Exposure Monitoring in Medical Imaging (REM2026) will take place from 11th to 13th June 2026 in Sofia, Bulgaria. It is hosted by six governmental and non-governmental organisations, including the Bulgarian Society of Biomedical Physics and Engineering (BSBPE), under the auspices of the Ministry of Health. Nine key international organisations and professional bodies—including EFOMP, IAEA, ICRP, ISR, IOMP, ISRRT, ESR, EFRS, and Image Gently—are supporting the symposium and are represented on the International Advisory Committee.

With the motto "Enhanced patient care through effective data management", the symposium will bring together experts from Europe and beyond, researchers, and practitioners to exchange knowledge, experience and discuss automation, digitalization, data analytics and integration of radiation exposure monitoring within healthcare systems. REM2026 will address the latest developments and future directions in radiation exposure monitoring and dose management across all imaging modalities, including diagnostic radiology, interventional procedures, nuclear medicine and imaging in radiotherapy. Topics include workflow optimization, various analytical uses of exposure data, AI-driven analytics, national dose registries, hospital dose monitoring systems, data protection and ethics, and training and communication aspects. By exploring both technical and organizational aspects, the event will promote a multidisciplinary approach and dialogue between medical physicists, radiologists, radiographers, IT professionals, health authorities, manufacturers, and patient representatives.

The invited speakers will include globally recognized leaders in medical physics and radiology, along with representatives from the partnering organisations. Through keynote and plenary lectures, panel discussions, and refresher courses,

REM2026 will serve as a platform for dialogue, cooperation, enabling participants to exchange best practices, share implementation experiences, innovative tools and explore how data-driven solutions can improve patient safety and quality of care. It will be emphasized how automated exposure monitoring systems can be connected to hospital PACS/RIS infrastructures, national dose registries, and quality control programs to support clinical decision-making and regulatory compliance.

About the event

REM2026 is a three-day international symposium dedicated to radiation exposure monitoring and dose and image quality data management in medical imaging. The program will be organized in single-track sessions, ensuring that no important discussion will be missed. Each session will feature invited talks and proffered oral contributions, as well as e-posters, covering the broad scope of topics.

The abstract submission is open, the deadline for submission of abstracts for oral and e-poster presentations is 31st December 2025, and 30th January for only e-poster presentations.

The online registration includes four levels of fees depending on the registration period, and a reduced fee for participants who reside and work in a low- or a middle-income country.

Accepted abstracts will be published in a special issue of Folia Medica, and proceedings with full papers will be published in the IFMBE Proceedings Series. Selected peer-reviewed full papers will be published in a special issue of Physica Medica, European Journal of Medical Physics.

The organisers plan to apply for EBAMP accreditation as CPD event for Medical Physicists at EQF Level 8.

In parallel with the reach scientific program, participants will have the opportunity to explore the rich history and culture of Sofia and Bulgaria. Sofia is one of Europe's oldest capitals, a city that combines ancient history, modern culture, and natural beauty. Bulgaria offers visitors rich traditions, welcoming hospitality, and easy access to some of the most remarkable cultural and natural landmarks in Southeast Europe.

REM2026 promises to be a unique event, combining scientific excellence, professional networking, and cultural experience.

We warmly welcome colleagues from all over the world to take part in this inspiring symposium and contribute to the advancement of radiation exposure monitoring and data-driven patient safety and quality care.

More information:
https://rem2026.roentgen-bg.org/

Article prepared by the REM2026 Organising Committee

Desislava Kostova-Lefterova, Co-Chair of the Organising Committee of REM2026 Symposium. She is Associate Professor of Medical Radiological Physics and President of the Bulgarian Society of Biomedical Physics and Engineering. She has extensive experience in radiation protection, optimisation, and image quality in medical imaging, has coordinated and participated in national and international projects, authored over 80 publications, and actively supports education and training in medical physics.

Jenia Vassileva, Chair of the Organising Committee of REM2026 Symposium. She is Professor of Medical Radiological Physics, former radiation protection specialist at the IAEA Radiation Protection of Patients Unit. She is currently President of Roentgen Foundation Bulgaria, member of the ICRP Committee 3 on Radiological Protection in Medicine for the term 2025-2028, and consultant for different projects of the IAEA.

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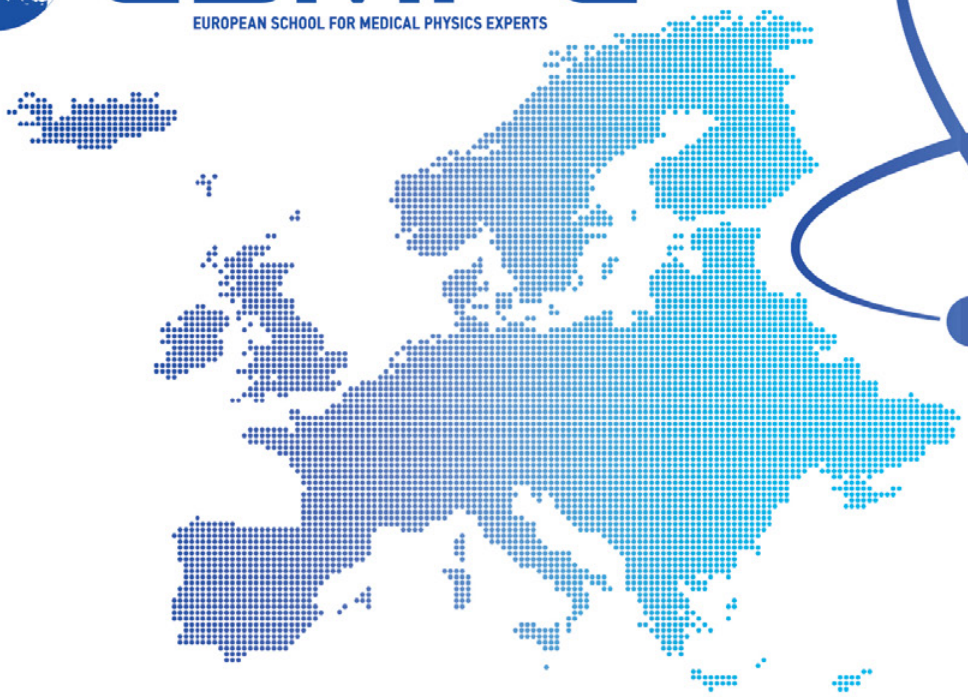

Hybrid Schools

High quality lectures and interactive sessions for Medical Physics Experts

Upcoming Editions in 2026:

- **Radiation Biology,** Porto, Portugal, 19th-21st February, 2026
- **Advancing Breast Imaging with AI: Innovations, Applications, and Future Directions,** Tallinn, Estonia, 23rd-25th April, 2026
- **School for Stereotactic Body Radiotherapy,** Cluj, Romania, 29th–31st October, 2026

- **Physics, Technology and Biology in Clinical Proton and Ion Beam Therapy, ECMP 2026,** Valencia, Spain, 23rd September, 2026
- **Auto Contouring methods for Radiotherapy, ECMP 2026,** Valencia, Spain, 23rd September, 2026
- **Diagnostic and Therapeutic Ultrasound: Physics, Techniques and Clinical Applications, ECMP 2026,** Valencia, Spain, 23rd September, 2026
- **Radiation Protection in Radionuclide Therapy** Valencia, Spain, 23rd September, 2026

- **Artificial Intelligence in Medical Physics** ESMPE course on e-LEMENT educational platform
- **School on Statistical methods in Medical Physics** ESMPE course on e-LEMENT educational platform

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Upcoming Conferences and Educational Activities

This list was correct at the time of going to press.
For a complete, up-to-date list, please visit our **EVENTS WEB PAGE**

Feb 16th, 2026 - Feb 19th, 2026
EURADOS Annual Meeting (AM2026) in Helsinki, Finland
Helsinki, Finland

Feb 19th, 2026 - Feb 21st, 2026
EFOMP School | Radiation Biology
Porto Portugal

Apr 23rd, 2026 - Apr 25th, 2026
ESMPE on Advancing Breast Imaging with AI
Mövenpick Conference Center, Tallinn, Estonia

Jun 11th, 2026 - Jun 13th, 2026
International Symposium on Radiation Exposure Monitoring in Medical Imaging
Sofia, Bulgaria

Jun 17th, 2026 - Jun 19th, 2026
64ème Journées Scientifiques de la SFPM (French MP Society)
Lyon, France

Sep 23rd, 2026
ESMPE on Physics, Technology and Biology in Clinical Proton and Ion Beam Therapy
Valencia, Spain

Sep 23rd, 2026
ESMPE on "Diagnostic and Therapeutic Ultrasound
Valencia, Spain

Sep 23rd, 2026
ESMPE on "Auto Contouring methods for Radiotherapy"
Valencia, Spain

Sep 23rd, 2026 - Sep 26th, 2026
The 6th Ecmp 2026 European Congress of Medical Physics (Ecmp2026)
Valencia, Spain

23rd September, 2026
Radiation Protection in Radionuclide Therapy
Valencia, Spain

Oct 5th, 2026 - Oct 9th, 2026
International Symposium on Standards, Applications and Quality Assurance in Medical Radiation Dosimetry (IDOS 2026)
Vienna, Austria

Oct 29th, 2026 - Oct 31st, 2026
ESMPE on Stereotactic Body Radiotherapy
Cluj, Romania

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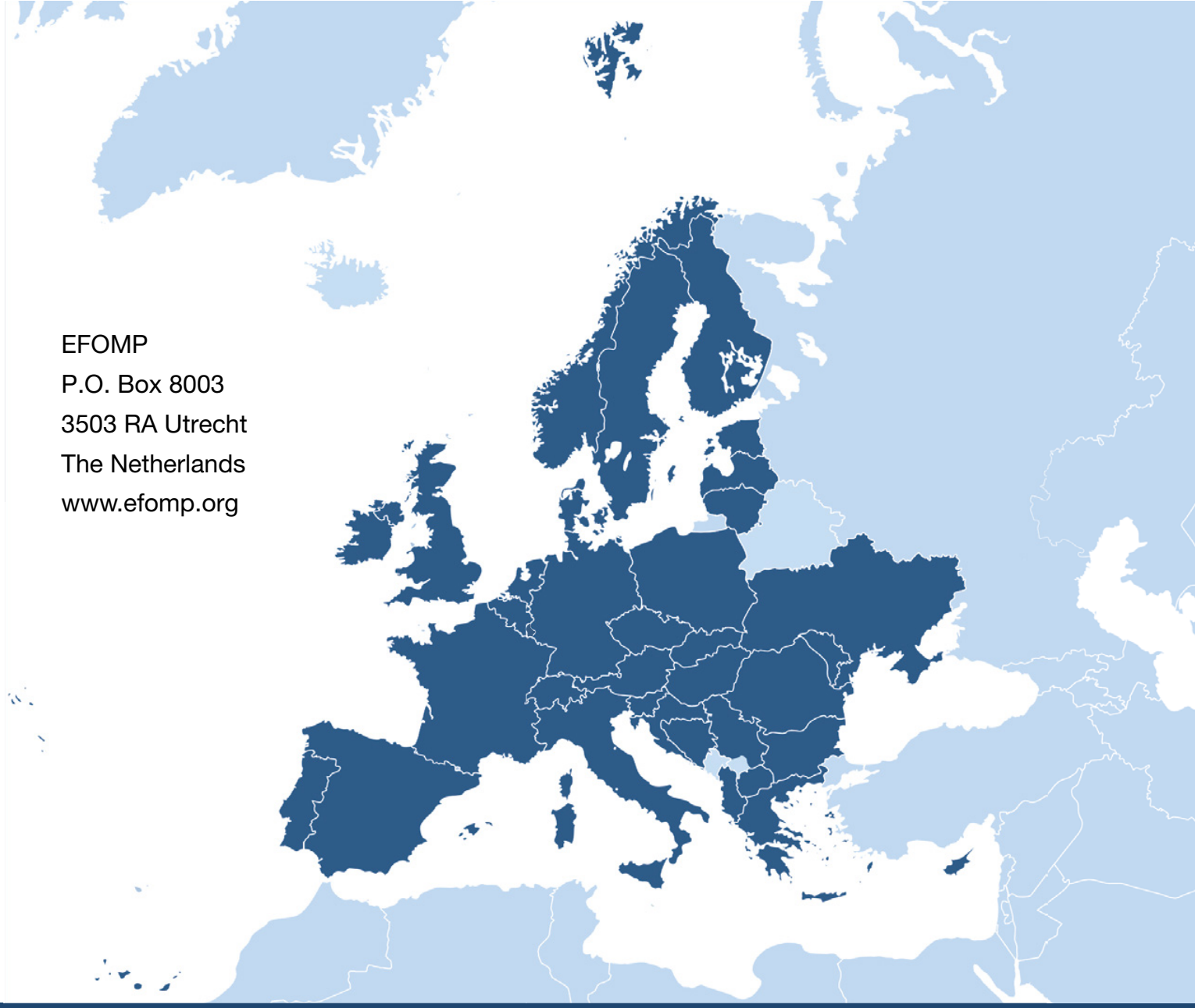

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The European Federation of Organisations in Medical Physics (EFOMP) was founded in May 1980 in London to serve as an umbrella organisation for medical physics societies in Europe. The current membership covers 37 national organisations which together represent more than 10.000 medical physicists and clinical engineers working in the field of medical physics. The office moved to Utrecht, the Netherlands, in January 2021.

The motto developed and used by EFOMP to underline the important work of medical physics societies in healthcare is “Applying physics to healthcare for the benefit of patients, staff and public”.

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