EFOMP

EUROPEAN FEDERATION OF ORGANISATIONS FOR MEDICAL PHYSICS

Enhancing Paediatric Care

EMP NEWS

ISSUE 01

SPRING 2026

www.efomp.org

European Medical Physics News is published by the EFOMP Communications and Publications Committee and distributed free-of-charge in electronic form.

Please register at the EFOMP website to receive notice of EMP News editions

EFOMP announcements mailing list

Send material for publication to any of the editors. The editors reserve the right to edit the text when appropriate.

Advertisements for relavant products and services are welcome, price list available on EFOMP website.

To join the EFOMP mailbase discussion list please send a subscription request by visiting the public subscription page at this link:

EDITORIAL BOARD

For more news and information about upcoming events and courses please follow us on social networks or visit our website:

Contents

Season of Growth

Dear EMP News readers,

It is a pleasure to welcome you to this issue of European Medical Physics News and to greet you for the first time in my role as Chair of the EFOMP Communications and Publications Committee. As spring is a season of growth, in this issue, we reflect that spirit by focusing on the youngest in healthcare; children and adolescents in our departments, and the young people who are discovering medical physics as a career.

Reflecting on a season devoted to young people

This Spring 2026 issue is dedicated to young people. For a child or teenager, entering a CT or MRI, a nuclear medicine department, or a radiotherapy bunker can be a confusing, frightening and overwhelming experience. Every day our colleagues across Europe and beyond, work hard to make their journeys safer and friendly; optimising protocols and equipment for paediatric use, but also reshaping communication, information materials and physical surroundings in ways that reduce fear and build trust.
A particularly inspiring example is "The Mission of Brave", created by the medical physicist Dr Georgina Fröhlich and her children. With a LEGO linear accelerator, head fixation masks and friendly characters such as Brave and Photon, this initiative presents radiotherapy as an adventure rather than a threat. Such initiatives promote the EFOMP's policy statement that "in addition to technical tasks, medical physicists must adopt a "patient-oriented" approach" and also show how physics, creativity and empathy can come together to reduce anxiety of patients for better treatment outcomes.

In this issue other articles explore how radiation protection is implemented in practice for paediatric cases, from dose optimisation and protocol tailoring to explaining benefits and risks in language that children and their families can understand. International initiatives, such as recent IAEA guidance and training activities on reference dosimetry, help to ensure that the doses we deliver to our youngest patients are as accurate and justified as possible across Europe and beyond.

Looking ahead: Empowering the next generation
Spring is also a natural time to look to the future and this issue does so by placing early career colleagues and prospective students firmly in the spotlight. We need to keep our field dynamic and responsive to evolving needs showing the high impact of the continuous EFOMP investment in education, training and mentorship. In this issue, the Early Career SIG reflects on the completion of its first Steering Committee term, documenting how it has built a strong network through congress activities, social media, newsletters, webinars and collaborative projects. Furthermore, an article shares a great example of bringing medical physics to life in schools; a UV-C experiment that explores the dose effect relationships and how science and patient care are strongly connected. We are also excited to share preparations for the

6th ECMP congress in Valencia, which will be held on 23–26 September 2026 under the theme "Advancing Healthcare through Physics: Bridging Science and Patient Care for a Sustainable Future."

As you will read in this issue, the Early Career Committee is working closely with the congress planning committee to design sessions that are practical and interactive about the challenges of transitioning from studies to clinical responsibility. Mentoring activities, debates on societies and ways of working, and networking opportunities will all contribute to making ECMP 2026 a welcoming space for those at the start of their journey.

Innovation and creativity will be also showcased at ECMP 2026 through the DIY fair, which returns after successful editions in Dublin and Munich. The fair invites everyone to present self-developed tools, software, devices, 3D-printed solutions and phantoms that support clinical and research work. Selected contributions will be shared via EFOMP's e-LEMENT platform. The fair shows young professionals and students how ideas can move from a sketchbook to the clinic and even in educational platforms such as EFOMP's e-LEMENT.

Looking ahead: Strengthening foundations through education and collaboration

This issue also recognises the essential role of strong scientific and educational foundations. A report from the joint ICTP–IAEA workshop on reference dosimetry in external beam radiotherapy and brachytherapy describes intensive joint work between medical physicists and radiation metrologists to implement the latest IAEA codes of practice in a consistent, clinically meaningful way. Such activities support the objectives in international basic safety standards: to ensure that medical physics aspects of therapeutic and diagnostic procedures are performed by appropriately trained professionals, underpinned by robust dosimetry and clear quality assurance frameworks.

Taken together, the articles in this issue illustrate a powerful continuum: from young patients whose courage inspires us, to students and young professionals whose ideas and energy are shaping the next era of medical physics, to the educational and regulatory frameworks that safeguard quality and safety. They invite each of us to think on how we can contribute to an environment where everyone feels safe, supported and motivated, whether they are in the medical imaging room, treatment room or in the lecture hall. I look forward to meeting many of you at ECMP 2026 in Valencia.

Warm regards
Irene Polycarpou
Chair, EFOMP Communications and Publications Committee

Dr Irene Polycarpou is an Associate Professor in Medical Physics and Chair of the Department of Health Sciences at European University Cyprus, with research expertise in PET and SPECT imaging and multi-modality simulation.

EFOMP President's Report

Medical Physics at the Heart of Multidisciplinary Healthcare — From Established Practice to Novel Frontiers

Traditionally, Medical Physicists and Medical Physics Experts have been embedded within hospital departments of Diagnostic and Interventional Radiology, Nuclear Medicine, and Radiation Oncology. Increasingly, however, their expertise extends far beyond these core domains, reaching a broad spectrum of medical specialties — including dentistry, cardiology, neurology, otorhinolaryngology, surgery. The work of a qualified medical physics professional, is applied to so many branches of medicine requiring knowledge, skills and advanced competences. By strengthening their presence in administrative and leadership structures, medical physicists help ensure that investments translate into measurable improvements in patient safety and care effectiveness.

Medical Physicists are essential contributors within multidisciplinary teams in hospital, polyclinics and healthcare providers, accompanying the patient journey from screening and diagnosis through treatment, follow-up and long-term management. Their pivotal role in ensuring quality, optimization, efficiency and innovation at every stage of care perfectly complements this year's five-year reflection on Europe's Beating Cancer Plan which outlines a vision for a more preventive, innovative and equitable EU cancer policy that prioritise patient needs. The Medical Physics professional, being an important player in the healthcare multiprofessional workforce is part of this joint effort towards a healthier life style and long-living.

On the World Cancer Day 2026, on February 4th, the 5th Edition of the European Code Against Cancer (ECAC5), an initiative from the European Commission and the International Agency for Research on Cancer, was launched. The code includes 14 recommendations on personal behavioural factors, environmental factors and medical interventions specific to the general population in Europe. Adopting healthy behaviours such as not smoking, avoiding alcohol, maintaining a balanced diet, and engaging in regular physical activity not only reduces cancer risk but also lowers the incidence of heart disease, diabetes, and respiratory conditions. Mitigating exposures in the workplace and daily environment can also contribute to reducing the risk for respiratory diseases. The code also puts forward recommendations for breastfeeding, cancer-causing infections, hormone replacement therapy, and organised cancer screening programmes. These recommendations provide co-benefits to prevent other noncommunicable diseases (NCDs) with similar underlying risk factors, and opportunities for health promotion.

For the first time, ECAC5 is aimed not only at individuals but also at policy-makers and governments, including 14 complementary science based recommendations on population-level measures. Successful implementation of the Code relies on strong collaboration among policy makers, educators, healthcare professionals, researchers, civil society, patient groups, and the private and pharmaceutical sectors. When these actors work together, they can ensure consistent messaging, reaching and educating people – especially the young generation - where they live, learn, grow and work.

On the World Cancer Day 2026, I had the opportunity to discuss this agenda while participating in a round table "People at the Centre - Bridging Pathways of Care" organized by the Hellenic Patient Representative Organisation, member of the European Cancer Organisation (Figure1). The discussion benefited from the exchanges with the international panelists who brought a diverse intersocietal perspective from academia, clinical practice, public health, and policy.

EFOMP and its National Member Organisations are actively contributing to many innovative efforts such as national vaccination and screening campaigns, patient education and decision making, European inter-specialty training programmes.

Figure 1. Roundtable focusing on the European Code Against Cancer in Athens, Greece.

Members of the European Parliament further recognise health and oncology care as social investments, encouraging the use of national and European instruments to strengthen the infrastructure and expertise, including screening programmes, modern equipment and workforce development.

At the European Congress of Medical Physics 2026 in Valencia, a dedicated session will place the patient, family and caregivers firmly at the centre of discussions highlighting how modern medical physics supports personalised, precise, equitable care and quality of life.

References

Europe's Beating Cancer Plan, Special report

Submit your abstract and plan 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. Deadline 31st March 2026!

https://ecmp2026.efomp.org/

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

A new year begins and it is my final year as EFOMP Secretary General. After weeks of rain in Ireland, I am looking forward to the brighter days and some nice weather that the Springtime will bring us!

EFOMP Governing Committee Updates

This January we welcomed some new members to the EFOMP Board. Congratulations to our new Vice President, Dimos Baltas (DGMP/Germany) who joined us on the EFOMP executive board. Dimos will take over from Efi as President in January 2027. The EFOMP Board is also supported in 2026 by three new Vice Chairs, Christina Zacharatou (IAPM/Ireland), Education and Training, Luis Brualla (SEFM/Spain), Projects Committee and John Dickson (IPEM/UK), Scientific Committee. I especially welcome Jurgita Laurikaitiene (SMP/Lithuania) as she becomes the assistant Secretary General.

Figure 1. Dimos Baltas, Vice President EFOMP

In April we will hold our Spring Officers Meeting in Tallinn, Estonia on the 25th of April and we are very grateful to the Estonian Society for Biomedical Engineering and Medical Physics (ESBEMP) for hosting us there alongside our ESMPE school on Advancing Breast Imaging with AI. You can read more about the upcoming school in an article by the chairs of the school in this edition of EMP news.

EFOMP/EANM Nuclear Medicine Core Curriculum

The core curriculum has been published and is now available on our website here. We are now seeking volunteers for our first EFOMP Comprehensive Core Curriculum. If you are interested in joining the group who will work on this topic, please contact me or apply via your National Member Organisation (NMO).

Figure 2. EFOMP at AAPM Summit

EFOMP represented at AAPM Summit: Empowering Medicine through Physics.

In February, EFOMP was represented at the

AAPM Summit in Washington, USA by the EFOMP Special Interest Group for "Radionuclide Internal Dosimetry". We are most grateful to the secretary of the SIG Steering Committee, Secretary: Katarina Sjögreen Gleisner (SHPA/Sweden) for taking on this task.

The Summit was organised around three domains where physics-enabled leadership is especially consequential:

- the continued evolution of theragnostics through the integration of advanced imaging, dosimetry, and targeted therapies;

- the responsible development and deployment of artificial intelligence and computational science to enhance rigor, efficiency, and clinical decision-making;

- and the frontiers of new science, where emerging technologies and paradigms will redefine what is possible in medicine.

Projects Updates

On behalf of the MARLIN consortium, we are pleased to announce that the final report has been published by the European Commission in its Radiation Protection Series, No. 208. This report deals with Recommendations for Reporting and Learning from Patient-Related Incidents and Near Misses in Radiotherapy, Interventional Cardiology, Nuclear Medicine and Interventional and Diagnostic Radiology.

We would like to thank all our NMOs for participating in the various surveys and workshops during this 24-month project and a special word of thanks to our EFOMP representatives Colin Kelly (Ireland), Andy Rogers (UK), Stephan Nekolla (Germany) and Jonas Andersson (Sweden).

This project has received funding from the European Commission under Service Contract N° ENER/2022/NUCL/SI2.880751.

Over the last 12 months, European Institute for Biomedical Imaging Research (EIBIR), European Association of Nuclear Medicine (EANM), European Federation of Organisations for Medical Physics (EFOMP), and European Society of Radiology (ESR) have investigated new technologies and regulations of medical radiological equipment used in diagnostic radiology, nuclear medicine and radiotherapy since the publication of Radiation Protection Series No. 162 in 2012.

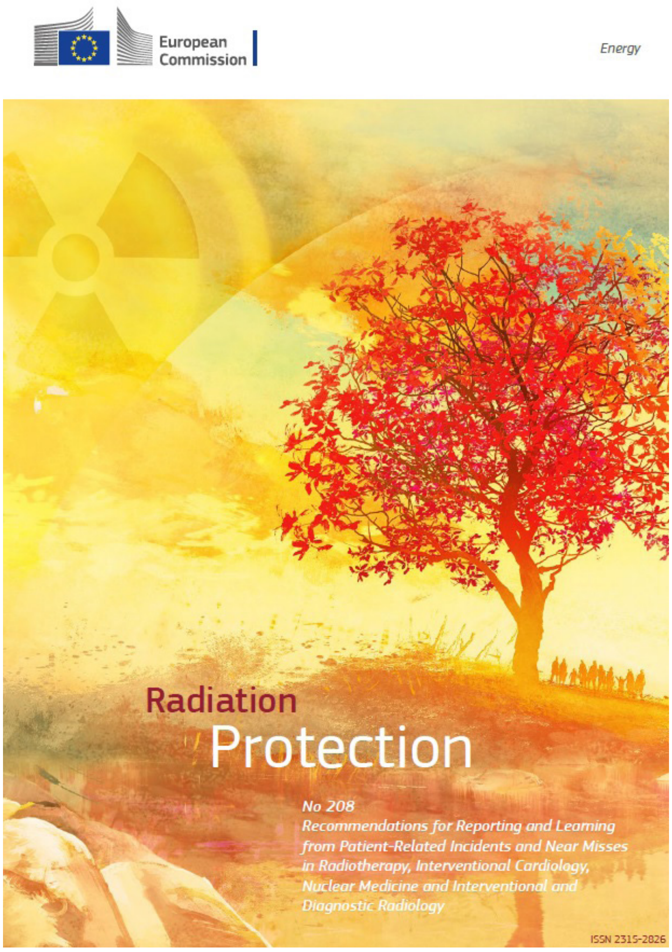


Figure 3. Marlin Project report

The CARE consortium is proud to announce its upcoming workshop on the criteria of acceptability of medical radiological equipment on 1–2 June 2026 at the Hotel Parc Belle-Vue in Luxembourg. Participation is free of charge, but registration is required using an online form by **Thursday, April 30**. The draft programme is available on the project website

Figure 4. Marlin Project report

EFOMP Mentorship Programme

Following the success of the previous programme, we are relaunching the call for applications to join the EFOMP mentoring programme, either as a mentee or as a mentor. The deadline for registering for this new round is 31 March 2026. You can fine more information (introduction, mentors) about the new EFOMP "Mentoring in Research" programme on our website.

Thanks to all you dropped by the EFOMP booth at ECR in Vienna. We look forward to meeting more of our colleagues at the ESTRO Congress in Stockholm in May.

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 2009 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.

EFOMP friends at ECR2026



























Physica Medica: Editor's Choice

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

G. Petringa et al **Design and validation of an integrated reference dosimetry and monitoring system for ultra-high dose-rate proton beams ranging from 20 Gy/s to 230 Gy/s** Phys. Med. 2025;138: 105187 https://doi.org/10.1016/j.ejmp.2025.105187

FLASH proton therapy (pFLASH-RT) is gaining momentum, but one of the key barriers to wider experimental and clinical implementation remains reliable reference dosimetry at ultra-high dose rates. In this study, the authors present an integrated dosimetry and beam monitoring system specifically designed for proton beams in the challenging dose rate range of 20–230 Gy/s. The proposed approach combines three complementary detectors: a Secondary Emission Monitor (SEM), a Dual-Gap Ionization Chamber (DGIC), and a Faraday Cup (FC). The SEM and DGIC provide continuous real-time monitoring, while the Faraday Cup acts as the reference device for dose calibration. The system was experimentally validated using a 62 MeV proton beam at INFN-LNS, and correction algorithms (including Boag–Wilson theory) were applied to address ion recombination effects at high dose rates. The results demonstrate strong reproducibility and impressive stability across the full tested dose-rate range. The Faraday Cup achieved a mean relative dose uncertainty of 2% without significant dose-rate dependence, even at 230 Gy/s. Agreement between SEM and FC remained within 1.4%, and DGIC uncertainty was reduced to below 3% after applying correction factors. Overall, this work provides a robust and practical dosimetric architecture for pFLASH-RT, supporting both radiobiological research and the future integration of ultra-high dose-rate proton therapy into clinical workflows.

L. Cerbone **Radiography for in-flight health assessment in the framework of astronauts' healthcare: a new field for medical physics? Phys. Med. 2025;139: 105197** https://doi.org/10.1016/j.ejmp.2025.105197

The recent acquisition of the first-hand radiograph in low Earth orbit has attracted significant attention, as it represents a milestone for diagnostic imaging beyond Earth. Building on this achievement, this review provides a timely overview of the current state of X-ray imaging technologies for space applications, framed around the medical needs of astronauts and the unique constraints of the space environment. The author surveyed the literature on radiography and spaceflight and highlighted a range of medical conditions that could potentially benefit from in-flight X-ray imaging, either for diagnosis or treatment-related decision-making. The review also provides an overview of the technology currently available for in-flight imaging and includes discussion of gender-specific aspects, which is particularly relevant as space missions increasingly involve more diverse crews. Importantly, the paper identifies key challenges that remain unresolved. These include device limitations, sources of image deterioration, and the need for dedicated image quality assessment and dosimetry studies under space conditions. Given that only one radiographic image has so far been acquired in orbit, the author emphasises that the field is still at a very early stage, and further research is required to evaluate feasibility, radiation dose, and quality assurance requirements. Overall, this review highlights an emerging and highly interdisciplinary area where medical physicists can play a central role, supporting the development of safe, reliable, and clinically meaningful X-ray imaging for future human spaceflight.

J. Domienik-Andrzejewska et al **Considerations on dose constraints in interventional cardiology – first approach to establishing dose constraints** Phys. Med. 2025;140: 105685 https://doi.org/10.1016/j.ejmp.2025.105685

Occupational exposure in interventional cardiology remains a key radiation protection challenge, particularly due to the complexity of work patterns, variability in workload, and the fact that many physicians operate across multiple sites. In this study, the authors address the timely and still insufficiently investigated topic of establishing dose constraints (DCs) for interventional cardiologists, following the principles outlined in ICRP Publication 103 and the EU Basic Safety Standards Directive. The paper proposes indicative values for dose constraints expressed as annual personal dose equivalents at 10 mm and 3 mm depth. The methodology is pragmatic and data-driven, based on the analysis of dose distributions and third quartile values derived from two sources: measured occupational monitoring data from interventional cardiology facilities and annual doses estimated from EURALOC survey responses. The paper emphasises that the final selection of DC values should be refined by assessing the use of radiation protection measures in the workplace. Overall, this work supports a realistic approach to strengthening occupational dose optimisation in interventional cardiology and provides a useful starting point for centres seeking to develop more comprehensive and compliant radiation protection programmes.

G. Petringa et **Toward the use of Silicon Carbide based detector for proton therapy microdosimetry** Phys. Med. 2025;140: 105675 https://doi.org/10.1016/j.ejmp.2025.105675

By a complete coincidence, the fourth paper comes from the same first author and the same research group as the first paper I selected for this letter. Microdosimetry is increasingly important in proton therapy, particularly as the community moves toward biologically informed treatment planning and improved modelling of LET and RBE variations. In this context, the authors present the first experimental microdosimetric characterisation of a Silicon Carbide (SiC) p–n junction detector in clinical proton beams, exploring SiC as a promising alternative solid-state material for microdosimetric applications in hadrontherapy. The SiC device demonstrated full charge collection efficiency and excellent energy resolution (approximately 2%) under alpha irradiation. The measured microdosimetric spectra exhibited consistent depth-dependent trends reflecting LET variations, with good agreement against both Monte Carlo simulations and the reference detectors. Importantly, the derived frequency-mean and dose-mean lineal energy distributions enabled LET and RBE estimation through the Microdosimetric Kinetic Model (MKM). RBE values reconstructed from SiC measurements were shown to reflect experimental radiobiological data for U87 glioblastoma cells. Overall, this work supports SiC as a highly promising microdosimetric detector material, combining radiation tolerance, stability, and accurate LET-dependent response. The results highlight its potential role in RBE estimation and future biologically optimised proton therapy workflows, with future developments targeting miniaturisation and extension to heavier ions.

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

The Mission of Brave - Let's Turn Radiotherapy Into an Adventure

Georgina Fröhlich – National Institute of Oncology, Centre of Radiotherapy and Eötvös Loránd University, Department of Biophysics, Budapest, Hungary

An average of 10,000 children with cancer undergo radiation therapy worldwide each year[1]. The Mission of Brave is a charitable paediatric programme created by medical physicist expert Dr. Georgina Fröhlich and her children at the National Institute of Oncology, Budapest that aims to reframe the experience of radiotherapy for young children as an engaging and supportive adventure. The aim of the programme is to help reduce anxiety associated with radiotherapy with involving the child in an imaginary adventure with the help of an identifiable character, 'Brave'[2].

Figure 1. Brave and Photon in their spaceship

The central element of the project is a gift box that children receive before their radiation treatments. The box contains a LEGO linear accelerator set designed by Gina, themed radiotherapy toys, and educational materials that present the steps of radiotherapy in a playful way.

Figure 2. The content of The Mission of Brave gift box

The LEGO linear accelerator is the basic element of The Mission of Brave gift box. It comes with assembly instructions, and each set includes a unique LEGO figure that most closely resembles the child in question. The QR code on the box of the kit links to a short film made by Gina and her children, featuring the LEGO bunker they designed and built themselves:

https://onkol.hu/hirek/sugarterapiarol-kicsiknek/

Their short film won them the Teva Humanitarian Health Award[3].

The box includes a storybook called The Test of Courage, which is about different types of oncological treatments, and a mission booklet that starts with a comic strip. During radiation therapy, Brave dreams that he is a heroic astronaut destroying the malignant cells attacking the planet. This is followed by a radiation therapy-themed crossword puzzle, a photon maze, a bunker colouring book, radiation jokes, and a stamp collector. The little booklet naturally comes with a set of coloured pencils. These develop creative thinking while making it easier to understand and accept the treatment process. The 'Brave' LEGO figure and comic book help children identify with the story. This narrative strengthens children's self-confidence and motivation. Brave's mission booklet won the AIPM - Innovative Pharmaceutical Manufacturers Association's Health Award[4].

The program also includes Photon, a teddy bear hugging a plush blanket. Children can lie on this during the treatment series (instead of the green disposable paper sheets). These toys provide comfort during treatment, as parents are not allowed to be in the treatment room with their children during radiation treatment.

Children, who require the use of an individual head fixation mask, can choose from 31 designs to decide which fairy tale character they would like to become for the duration of their treatment series. The chosen design is then painted by hand by members of the radiotherapy staff.

The creation of a friendlier environment is aided by the Brave-patterned work clothes worn by the professionals working with the children, as

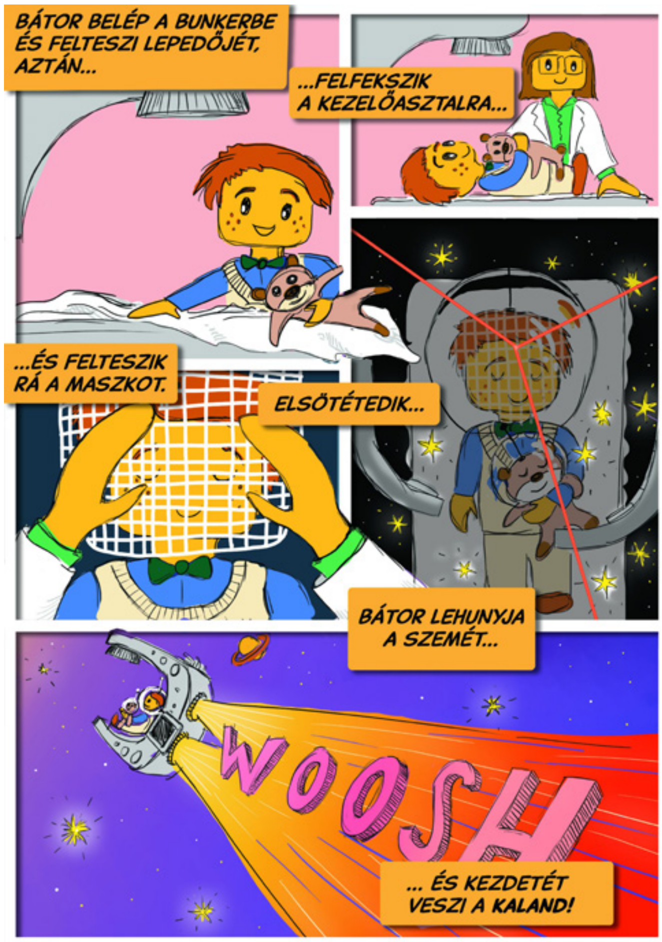


Figure 3. The adventure of Brave in the mission bookletΑωv

well as the unique astronaut light painting in the treatment room and the linear accelerator[5]. The aim is to transport children undergoing radiation therapy into a fantasy world themed around heroic astronauts, which they will already be familiar with from related comics and the LEGO film. Both elements intended to make the clinical environment feel more comforting and to reduce the sterile atmosphere typical of radiotherapy facilities.

At the end of the treatment series, children can ring 'The Bell of Hope', which has symbolic significance and represents the possibility of successful recovery for patients still undergoing treatment. As a reward for the stamps collected during treatment, they receive a large Brave plush toy and a Brave shaped gold medal, which certifies the successful completion of the treatment series.

Figure 4. The Fabulous Masks and the team that created them

Figure 5. The astronaut light painting in a radiotherapy bunker

The Mission of Brave project won the Richter Anna Award as an innovative healthcare initiative[6].

References:

[1] "Childhood Cancer Facts"

[2] "The Mission of Brave - Let's turn radiotherapy into an adventure!"

[3] "Az Emberarcú Egészségért díj 2022 győztesei".

[4] "Korábbi díjazottjaink"

[5] "The Mission of Brave charitable paediatric programme"

[6] Richter Anna Díj 2023 - Bátor küldetése

Georgina Fröhlich is a Medical Physicist Expert, Associate Professor. Her fields of research are dose optimisation algorithms and biological dose integration of external beam- and brachytherapy. She founded and leads the 'Medical Biophysics' M.Sc. training module in Hungary. A triathlete (Ironman), ultra-trail runner, founder of the 'OncoTeam' running club.

A simple Medical Physics Experiment with UV-C for Schools to Demonstrate the Dose to Irradiation-Effect Curve

The fundamental basis of radiation therapy is the dose to irradiation-effect-curve for ionizing radiation to cells, as described by e.g. Holthusen in 1936, showing that the sigmoid irradiation effect curve starts for normal tissue cells starts to increase at higher dose levels than for cancer cells. This is due to DNA-repair mechanisms in cells that evolution has developed to cope with effects from the dose of ionizing radiation from natural sources such as radioactive isotopes or cosmic radiation. We are usually not aware of this natural dose, as it is constantly around us and its effects are rarely visible. We, as Medical Physicists, are very well aware of it and can measure it with our instruments to ensure necessary levels of radiation protection and to deal with it to the benefit of patients in radiotherapy.

In 2012, I developed with the help of my colleague Prof. W. Schilf from the microbiology department at my university a simple irradiation experiment to demonstrate the dose to irradiation-effect curve to school pupils of secondary schools that does not require explicit ionising radiation from, e.g. an X-ray tube, which is a costly instrument for schools and requires a radiation protection officer, too. Instead, it uses UV-C radiation that is employed for sterilization purposes in water treatments or at microbiology workbenches. These UV-C lamps are available, e.g. for aquarium water treatment, and its radiation can be easily blocked by any light-tight material. For this irradiation experiment, I developed a wooden box consisting of a 5W UV-C lamp in the top cover and 4 stackable frames of 10 cm height to vary the irradiation distance to show effects of the irradiation distance, too (Fig. 1). The box can be made of any other light tight material and I heard from school projects that used large metal ventilation pipes instead or printed a box for a single Petri dish with a 3D-printer. The lamp operates directly with 230V via a starter socket for fluorescent tube lamps and its light power can be reduced by partly covering it with a foam used for thermal insulation of heating pipes. Since UV-C LED strips operated from 5V-USB power are on the market now, these could be used possibly as light source as well. One side of the bottom element of the wooden box can be opened to place up to two petri dishes with the cell cultures inside for irradiation at the same time. They will be stored under different conditions later to show additional repair effects. The wooden stack elements have additional protection inside to cover the slits to prevent UV-C light from leaking out. The box can be covered by a light-tight black cloth as an additional safety measure.

We use simple baking yeast as cells on suitable agar petri dishes that can be ordered or prepared by yourself as an additional biology project. Yeast has the advantage that it is cheap and easily available. It is of no harm, so the pupils could even eat it. On top, yeast cells are eukaryotic cells, so not so far away from us humans for the biological aspect of the project. It does not require very specific or stable temperatures to grow as anyone who uses it for a cake knows. A series of about 4-5 times of 1:10-dilutions of a tiny bit of yeast in water is prepared with an

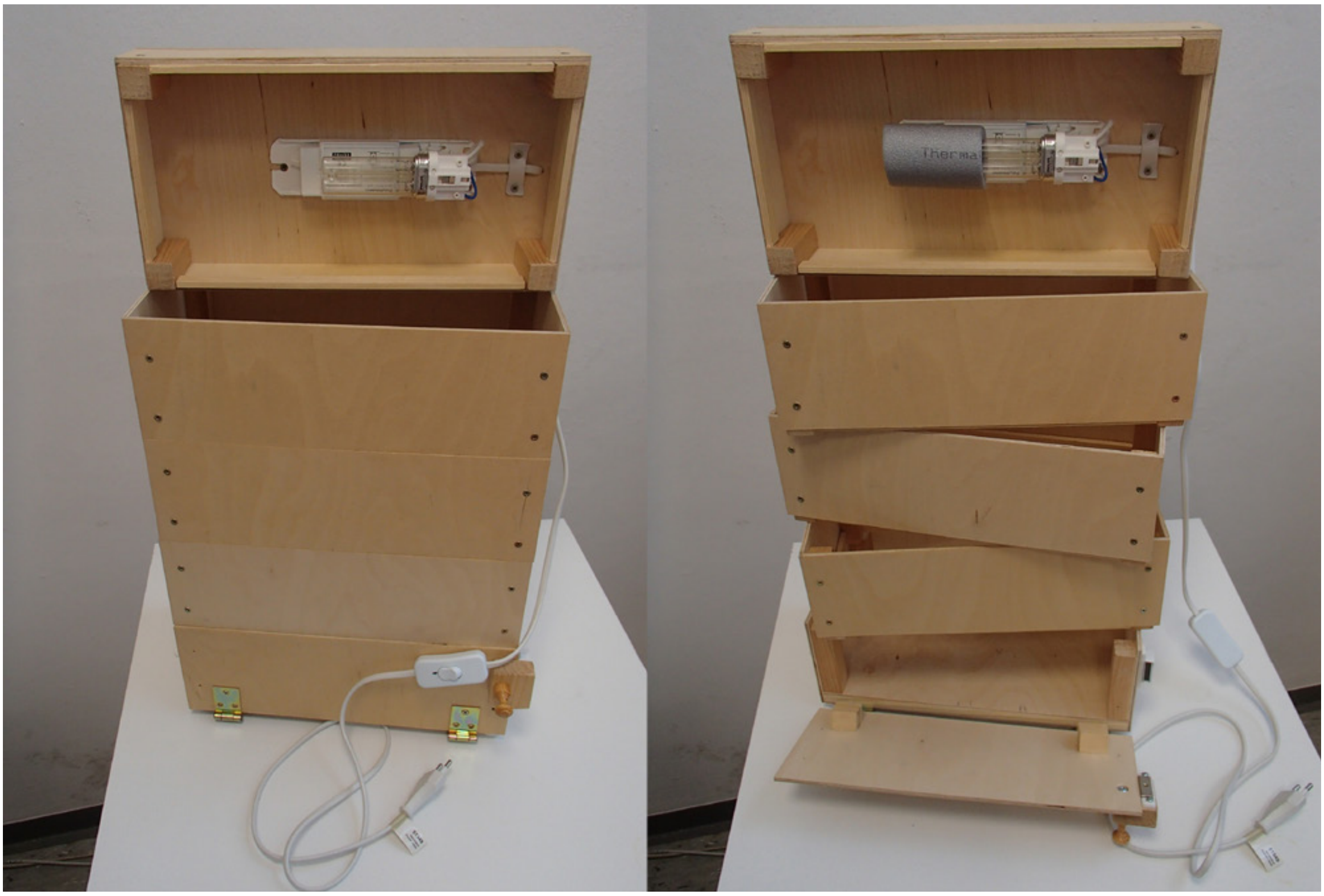


Figure 1: Wooden UV-C irradiation box of stackable elements with a 5 W UV-C lamp it the top element and power-cord with switch to operate it and an element with flap in the bottom to place petri dishes inside. A piece of insulation-foam pipe slipped over the lamp can reduce the light power. (Photos: M. Buchgeister)

Eppendorf pipette such that when the solution it distributed to 6 petri dishes, there are about 100 cells are on each. I recommend to team up with a biology teacher, that practiced this very often during their studies. Another benefit is that this is a nice experiment linking physics and biology subjects at schools and already indicating the multidisciplinary aspects of Medical Physics.

With an irradiation distance of about 40 cm, irradiation time steps of 30 seconds have proven to yield good dose effects on the yeast cells to evaluate the dose-effect curve. The time interval can be easily measured from a wristwatch or smartphone app. The irradiation is started and stopped by a hand switch in the power cord. One petri dish of each series has to be kept un-irradiated as a reference. To show the additional photolyase-DNA-repair mechanism of yeast cells, an irradiated set of petri dishes can be stored in darkness and another at ambient light at room temperature.

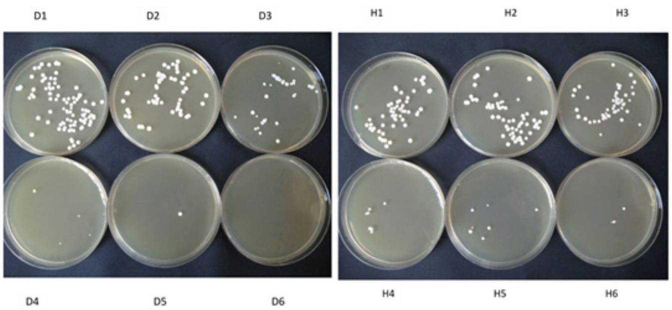


Figure 2: Two series of irradiated yeast cells after growing for about two days at room temperature. Left: Petri dishes were stored in a dark box, right: Petri dishes were stored at ambient light for the same time, showing the effect of photolyase DNA-repair mechanisms of yeast cells. (Photos: S. Schweitzer)

The maximal number of cell-colonies of about 100 can easily be counted by the pupils (Fig. 2) and the results plotted as irradiation-time to number of cell-colonies diagram (Fig. 3). The number of cell-colonies as well as the diagram show as the first learning goal that a modest irradiation of about 30-60 seconds under these conditions is well tolerated due to active repair mechanisms of the cells when compared to the un-irradiated dish. The second learning goal is that, a threshold time (=dose) exists above which the cells do not survive anymore. Additional effects can influence the DNA-repair mechanism by the photolyase of yeast as shown in this experiment. Your biology expert can further explain this mechanism. The overall message of this experiment should be that is that it is our knowledge of physics and in Medical Physics, especially our knowledge about ionising radiation and its dosimetry that lets us deal safely with it!

I thankfully acknowledge the help of my colleagues W. Schilf, S. Schweitzer, M. Stressmann, B. Laube and D. Buddelmann that prepared the necessary petri dishes and teached the biology part in courses for teachers and pupils at our university in the past years.

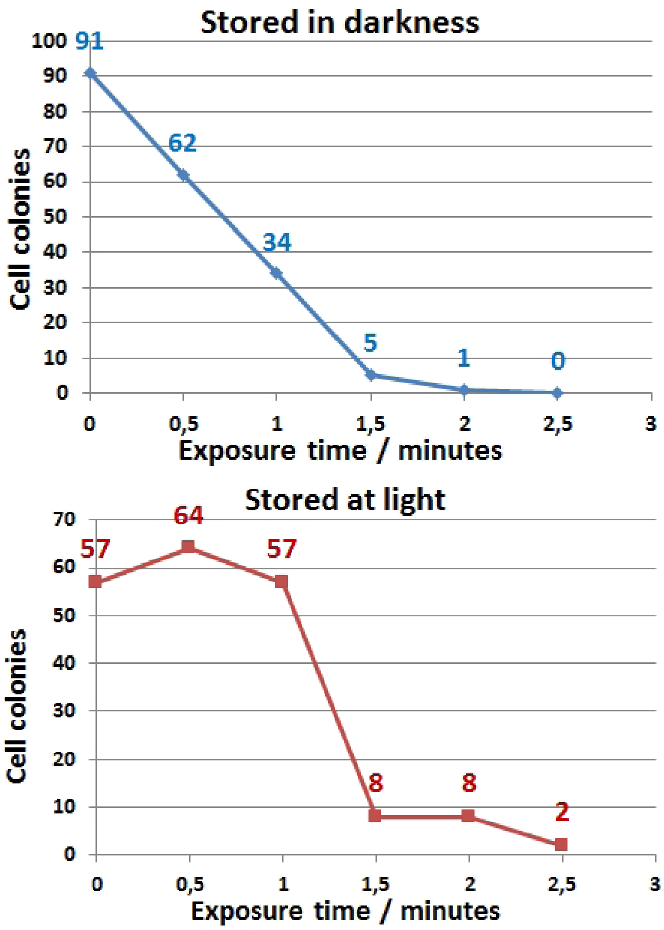
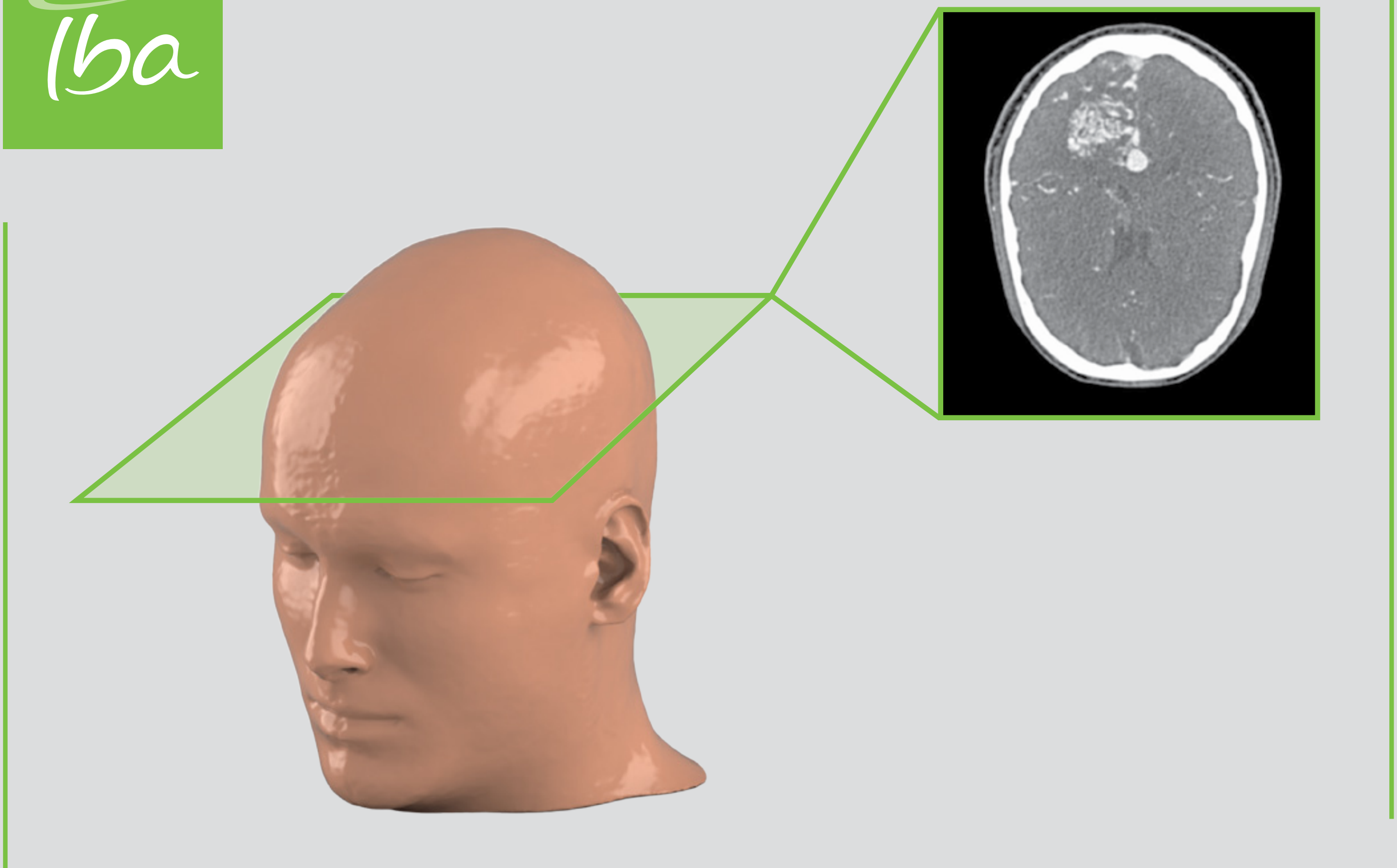
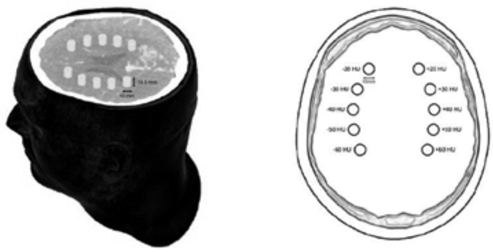


Figure 3: Irradiation-time (= dose) to number of cell-colonies (= irradiation effect) curves for yeast cells irradiated with UV-C light as shown in Fig. 2.

Markus Buchgeister entered the field of medical physics in radiation therapy at the university clinic of Tübingen in 1995. In 2010, he received a call for a position as a professor of medical radiation physics at the Berliner Hochschule für Technik (University of Applied Sciences and Technology) in Berlin. Since 2003, he has been engaged as co-opted DGMP board member for public relations and communications of the German Society for Medical Physics. Parallel, he served as chairman of the EFOMP Communication and Publications Committee from 2003 - 2009 and from 2009 - 2015 as German EFOMP delegate. In 2017 - 2018 he was chairman of the EFOMP Education and Training Committee and is now a German EFOMP delegate again.





ESMPE school for Advanced Breast Imaging with Artificial Imaging, April 23rd-25th 2026 in Tallinn, Estonia

Figure 1: Registration Link

As all of us realize Artificial Intelligence (AI) is quickly taking off and being introduced in our daily life and also in medical imaging. One of the fields of medical imaging where several types of AI software are being introduced is breast imaging as AI has potential to be used in breast cancer screening and diagnosis. This school will offer an overview of AI technologies developed or in development for breast imaging: detection tools, positioning tools, breast density evaluation tools but we will also discuss AI software inside the mammography unit (AEC and image processing/reconstruction) and in breast cancer risk assessment.

This course will start with some basics of beast imaging and basics of AI technology before diving into the different applications of AI in breast imaging. As there is not a well-established method for quality evaluation or quality control of AI software being used in breast imaging, we will put some emphasis on this aspect and discuss some important aspects and issues.

In this course the presentations will be given by some well-known experts in breast imaging and by some experts in AI from the field of mathematics and metrology, who might be lesser known in the medical imaging community, but with a deep knowledge of AI and uncertainties in AI software. This will ensure that different perspectives on the use of AI will be given, which will give the participant in-depth knowledge on AI in general and what could or should be done to guarantee the safe use of AI software at the moment of installation and will help to guarantee safe use in the long(er) run. The course will also include the participation of some AI companies, who will present their products and to answer participants' questions.

This two-and-half day course is organized by EFOMP in collaboration with the Estonian Society for Biomedical Engineering and Medical Physics (EBMY), will be accredited by EBAMP (European Board of Accreditation for Medical Physics) and is intended for practicing clinical Medical Physicists who are involved or interested in diagnostic radiology with a focus on mammography. There will be an optional examination at the end of the course for those seeking a higher level of certification beyond attendance. ESMPE have decided this event will be in a hybrid format. All lecturers will give their talks on-site in Tallinn, Estonia, but participants can choose if they want to attend the school on-site or online, it will be live-streamed. EFOMP offers low fees of €200 to low income countries and to early career medical physicists under the age of 35 from our NMOs. Check out the registration pages for more information.

medieval markets, and towering church spires. Away from the Old Town's cobblestone streets, the city of Tallinn has a modern feel, with offbeat architecture and a vibrant cultural life. The newly reclaimed industrial areas are locals' favourite places to hang out, offering numerous design shops, art galleries, Bohemian cafés, cosy restaurants, and microbreweries to choose from.

Figure 2: Noblessner Quarter Tallinn

Figure 3. Tallinn Old Town

This is the first time EFOMP have organized an ESMPE school in Tallinn and we highly recommend that you come to visit this beautiful city. Estonia's capital Tallinn is famous for its picture-perfect Old Town, listed as a UNESCO World Heritage site for being one of the best-preserved medieval city centres in Europe. It is a fairytale neighbourhood of colourful merchant houses, hidden courtyards,

We look forward to welcoming you to Tallinn in April!

Valentina Ravaglia, Ruben van Engen (Scientific Chairs)
Joosep Kepler (EBMY Local Organiser)

Valentina Ravaglia is a MPE in the Medical Physics Department of AUSL Romagna, (past) chair, consultant, coordinator or member the AIFM Italian Working Group on Mammography, the technical group of GISMa, the AIFM Working Group on DBT Quality Control, the EFOMP DBT QC Working Group and participated in the EUREF DBT QC Working Group.

Ruben van Engen studied applied physics and is currently physics consultant at LRCB, the Dutch Reference Centre for Screening. (past) chair, member or consultant of many AAPM/EFOMP/EUREF/IAEA/ECIBC working groups. He is responsible for implementing QA schemes in Dutch screening programmes (mammography, ultrasound, AI), updating QC protocols, system optimization and type testing.

Joosep Kepler is a Medical Physics Expert specialised in diagnostic and interventional radiology and is based in Estonia. He is President of the Estonian Society for Biomedical Engineering and Medical Physics and is actively involved in the development of the medical physics profession at national level, including participation in the development of the Occupational Qualification Standard for Medical Physics Experts in Estonia. He is engaged in international professional collaboration within the European medical physics community.

Treasurer's Report of the Financial Year 2025 & Budget 2026

This report covers the period from 01/2025 to 08/2025.

The EFOMP's bank account held 702,951 EUR as of August 26, 2025.

Income:

EFOMP was able to operate in 2025 thanks to several factors:

- subscription fees:
  - NMO, IAM, and company members;
- EFOMP's activities:
  - EMP News publishing (advertisements), ESMPE;
- participation in projects;
- European Journal of Medical Physics - Physica Medica.

Subscription fees, EMP News advertisement and European Journal of Medical Physics royalties represent a basic part of the yearly budget contributing roughly 130k EUR. Other activities like ESMPE, Symposia, ECMP and projects have potential to create income, but not on a yearly basis. ESMPEs are primarily not meant to be gainful. On the other hand, they must be sustainable, which means that a reasonable income from some schools could support less visited schools or provide subsidized fees.

Only the result of ESMPEs, projects and similar activities appear in the budget in the activity is closed. Three ESMPE editions organized in 2025 are still waiting for final numbers. Due to various influences including an increase in overall prices, the expected result will be a deficit one.

The cooperation with EJMP involves redistributing the payments of honoraria to the editor-in-chief and managing editor. According to the EFOMP–Elsevier–AIFM agreement, our organization only resends the honoraria, so it will not appear in the budget in the future. The royalties from EJMP increased over time — EFOMP received 54,470 EUR in 2025.

The financial result of ECMP2024 was negative. The main reason was a large number of abstracts received and published in EJMP.

EFOMP's involvement in EU projects is additional source of income. Due to recent changes in the way EU projects will be handled, EFOMP board and Projects committee need to be extra careful in selecting projects to participate in. In a vast majority of cases EFOMP uses contractors to achieve the projects' goals and retains a portion of the overall funding for administrative purposes (25% for new projects, 10% for some older ones, or less if 25% is not possible). The new rule for EU projects means that EFOMP will have to pay for all the work and administration from its own pocket and will be reimbursed after the project is successfully completed and validated by EU. Unvalidated projects will not receive funding from EU.

Expenses:

Each part of EFOMP, such as the Governing and Advisory Committees, has its own budget. All costs linked to EFOMP activities are listed in the financial report table.

EFOMP runs a large number of active Working Groups (WGs) and an increasing number of Special Interest Groups (SIGs). WGs have deadlines to deliver their tasks, and only those still active within the agreed timeframe are funded based on the number of EFOMP-nominated members. Special Interest Groups operate without a specified timeframe, and a yearly budget of 5,000 EUR is assigned. It seems to be inevitable that a change in budget planning for WGs and SIGs will have to happen in 2026. As can be seen from the numbers, simply assigning a fixed sum doesn't work well. A yearly plan, created by the chairs and steering committees and approved by the chair of the parent committee should solve the problem with large differences between plans and reality.

Budget 2026:

The income section of the budget is based on expected trends.

EFOMP administration fees are well-predicted and are planned to remain the same in 2026. The only difference will probably be in association management fees. A one-year prolongation of the contract with Cantrijn office will be signed after 5 years of cooperation and fixed prices for their service.

The financial report presents the results as of 26.08.2025. Various payments are expected to be made before the end of 2025. EFOMP's financial year 2025 will be closed by the end of June 2026. This period is long enough to allow all outstanding invoices issued in 2025 to be paid.

Jaroslav Ptacek Asita volute prem fugit earchil laboribus mod escim a dolor solore sectur, cum que non nonsed qui dolorpo repelli cientin con et et fuga. Temque nitis andelitatem nis as alique voloren digenia sites am rerferumquam quam quo bere sam re nonseris nus reprem illiquia aliquo test, aut pla incte netur, aperchi tionseq uidelectam aut fugitatis apit utemporior sequam fugiaer ferionsedis aboribus, qui cori dolendaepedi consed quas sam quas venihilici nis

Discover ECMP 2026: Join Europe's Premier Medical Physics Congress in Valencia

The **6th European Congress of Medical Physics (ECMP 2026)** is just around the corner — and we warmly invite you to be part of this flagship event for the Medical Physics community. Taking place from **23 to 26 September 2026** in the vibrant city of Valencia, Spain, ECMP 2026 promises an inspiring blend of cutting-edge science, professional exchange, and cultural experience.

As the official congress of the **European Federation of Organisations for Medical Physics (EFOMP)**, ECMP has become a cornerstone for professionals across the globe. In 2026, we bring together clinicians, researchers, physicists, educators, regulators, stakeholders and industry partners to explore the latest advances in medical physics and related disciplines.

Why Attend ECMP 2026?

A World-Class Scientific Programme

The heart of ECMP is its rich scientific agenda. The programme has been carefully curated to reflect the breadth and dynamism of our field — from the latest innovations in imaging and therapy to advances in radiation protection, artificial intelligence, quality assurance, and beyond. Leading experts will share insights through invited lectures, panel discussions, oral presentations and poster sessions, offering both depth and diversity of content.

Whether your interests lie in clinical applications, research developments or technological breakthroughs, the congress offers multiple tracks to suit your professional focus. Visit the official website to explore the full programme and thematic highlights.

EFOMP School — Advance Your Skills

Before the main congress begins, ECMP 2026 opens with the **EFOMP School** — a series of high-value, training-focused workshops scheduled for 23 September 2026. These sessions provide in-depth instruction on key topics in medical physics and have been submitted for continuing education credits at both European and Spanish levels. The School is an excellent opportunity to deepen your expertise, acquire new skills, and engage with peers and mentors in a hands-on learning environment.

Networking and Collaboration

ECMP offers an ideal environment to build professional connections. The congress fosters dialogue across institutions, disciplines and career stages, enabling collaborations that extend far beyond the event itself. Whether through formal sessions, coffee-break conversations or social events, you'll find opportunities to meet colleagues from across Europe and beyond.

Valencia — A Beautiful Host City

Set on the Mediterranean coast, Valencia combines rich history, architectural splendour and contemporary culture with a relaxed, welcoming atmosphere. From the striking City of Arts and Sciences to the charming streets of the old town and the coastline, Valencia offers plenty to explore before, during and after the congress. Attendees can savour local gastronomy — including the world-famous paella — stroll through vibrant markets, or simply enjoy the sunshine and sea breeze.

Industrial Partners

We are pleased to welcome our industry partners to join us in Valencia! Your presence is vital to showcasing innovations, leading-edge advancements, eco friendly solutions, safe and effective use of medical technologies, and to shaping together the future of healthcare.

Register Today — Don't Miss Out!

Registration for ECMP 2026 is open, and early registration rates are available for a limited time. Whether you plan to attend the full congress, participate in the EFOMP School, you'll find all the information you need on the official ECMP 2026 website.

We encourage you to secure your place early and join us for an unforgettable meeting in one of Europe's most dynamic cities.

Come for the science — Stay for the experience. We look forward to welcoming you to Valencia for ECMP 2026

Invited Speakers Spotlight

Professor Joe Deasy

Professor Joe Deasy is internationally recognized for his pioneering work at the intersection of radiation oncology, medical physics, and computational science. His research has significantly advanced the understanding of radiation dose–response relationships, normal tissue toxicity, and data-driven modeling in radiation therapy. Prof Deasy has been instrumental in integrating large-scale clinical data, imaging, and biological information to improve treatment personalization and outcomes.

At ECMP26, Prof Deasy will deliver an invited lecture on novel approaches in radiation biology, highlighting emerging concepts that move beyond traditional radiobiological models. His presentation will address how modern data analytics, systems biology, and quantitative modeling are reshaping the way radiation effects are understood at both the cellular and tissue levels. This lecture will be particularly valuable for medical physicists seeking to bridge physics-based treatment planning with biological insight, and it will stimulate discussion on future research directions in biologically informed radiation therapy.

Professor Luc Beaulieu

Professor Luc Beaulieu is a leading authority in brachytherapy physics, with decades of experience in clinical implementation, dosimetry, quality assurance, and technological development. His contributions have played a key role in improving the accuracy, safety, and effectiveness of brachytherapy treatments, and he has been deeply involved in international task groups and guidelines that shape best practice worldwide.

For ECMP26, Prof Beaulieu will provide an invited lecture offering an overview of novel methods for brachytherapy. His talk will cover recent advances in imaging, treatment planning, dose calculation algorithms, and adaptive techniques that are redefining modern brachytherapy. By combining a strong theoretical foundation with practical clinical insights, this lecture will equip attendees with a comprehensive understanding of current innovations and future trends, reinforcing the continued relevance of brachytherapy in precision radiation oncology.

Professor Xun Jia

Professor Xun Jia is a prominent researcher in the application of artificial intelligence and advanced computation to radiation therapy. His work has contributed significantly to areas such as automated treatment planning, fast and accurate dose calculation, image reconstruction, and real-time adaptive radiotherapy. Prof Jia's research exemplifies how machine learning and AI-driven methods can enhance efficiency while maintaining or improving clinical quality.

At ECMP26, Prof Jia will present an invited lecture on the use of artificial intelligence in radiation therapy, focusing on both methodological advances and clinical translation. His talk will explore how AI is transforming workflows across the treatment chain, from imaging and contouring to planning and delivery, as well as the challenges related to validation, robustness, and clinical adoption. This lecture will provide attendees with a clear and balanced view of AI's current impact and its future potential in medical physics.

Professor Danielle Dobbe-Kalman

Danielle Dobbe-Kalkman works as an educational advisor at the Radboud University Medical Centre, and as a consultant for the Dutch Reference Centre for Screening. She is the educational expert of the EUTEMPE consortium and a member of EFOMP's Education and Training Committee. She regularly presents on tactics to improve educational efforts and assists with the design of courses to enhance their didactic value.

Danielle studied Learning and Development in Organisations and Educational Sciences. She is an expert on faculty and curriculum development and has done research in e-learning, workplace learning, and team learning. Danielle will talk about the ingredients that makes teaching effective, successful, and makes participants really learn. Sometimes we think of teaching as merely presenting, but there is so much more to teaching than that. With Danielle's tips everybody will be able to enhance their teaching skills and enjoy guiding a group towards learning!

Overall Contribution to ECMP26

Together, these invited speakers represent complementary and highly impactful areas of contemporary medical physics. Their lectures will enrich the ECMP26 scientific programme by bridging fundamental science, technological innovation, and clinical application, offering participants a comprehensive and forward-looking perspective on the field. This year's invited programme reflects the dynamic spirit of innovation in medical physics, with each session providing a unique opportunity to learn from global leaders who are translating advances from the laboratory to the clinic, ultimately enabling better diagnostics, safer practices, and more effective therapies for patients worldwide.

We look forward to receiving your abstracts and to welcoming you to ECMP 2026 in Valencia, Spain.
With kind regards,

Joao Seco and Jose Perez-Calatayud

Joint Chairs of ECMP 2026 Scientific Committee
ECMP 2026 Organizing Committee
European Congress of Medical Physics 2026

Do-It-Yourself Fair at ECMP 2026 — Bring Your Ideas to Life!

The Do-It-Yourself (DIY) fair was first organised in 2022 at the European Congress of Medical Physics (ECMP) in Dublin, with the aim of facilitating the exchange of solutions and ideas among the medical physics community, known for being active in developing DIY solutions to support their clinical and research work. The second DIY fair was organised at the ECMP in Munich in 2024. Many interesting and innovative contributions were presented, including software, scripts, customised 3D-printed solutions, devices, gadgets and phantoms.

The fairs demonstrated that there is an unmet need for sharing and distributing information about self-created solutions within the medical physics community. ECMP2026 in Valencia will once again host a DIY fair, and we hope that all colleagues with DIY solutions for clinical and academic needs will present their work!

If you want to know more you can read all about the first edition of the DIY fair in the EFOMP Journal Physica Medica.

DIY fair in ECMP2026 is waiting for your ideas.

The DIY fair abstract submission started on 1st of December and end 16th March 2026

Read more info on ECMP2026 webpage

The most interesting proposal will be rewarded with a free online registration for one of the upcoming European School for Medical Physics Experts (ESMPE) organised by EFOMP.

The videos of most useful and interesting proposals will be selected by a panel and, after ECMP 2026, uploaded to the EFOMP e-LEMENT platform to be shared in the long term (upon agreement of the authors).

We hope to see 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

Preparing the Early Career Track for the ECMP 2026

The European Congress of Medical Physics (ECMP) is just around the corner and it will be taking place in Valencia, Spain on 23-26th September 2026. As was done in the previous ECMP in 2024, this congress will again feature a dedicated Early Career Track. This will be happening in parallel with the main scientific programme. This is a space created specifically for students, residents or trainees and medical physicists at the start of their professional journey.

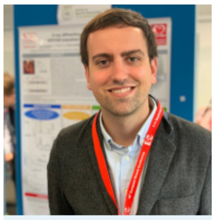
The start of the career can be exciting… but sometimes also a little overwhelming. From the student sitting on university benches, early career medical physicists suddenly need to start having clinical responsibilities, technical expertise, choose the right career path, constantly be abreast with current research and developments and participate in multidisciplinary teams, amongst other things. This can sound like a lot, and the Early Career track is being designed with these challenges in mind. So, what seems overwhelming can become more tangible and approachable through guidance and sharing with the community – and ultimately helping to build a strong and sustainable future for the medical physics profession in Europe and beyond.

This year's early career activities at the ECMP are developed by the Early Career Committee, which is working closely with the ECMP Congress Planning Committee to create a programme suitable for youths and integrated within the congress. The Early Career Committee consists of the following members:

- Leticia Irazola Rosales (Spain)
- Katryna Vella (Malta)
- Jesús García Ovejero (Spain)
- Beatriz García (Spain)
- Henriëtte Kuipers (The Netherlands)
- Maria Steinberger (Germany)

Leticia Irazola
FEA Hospital Radiophysicist, Biomedical Research Centre of La Rioja, Spain

Katryna Vella
Medical Physicist in Diagnostic and Interventional Radiology, Malta



Jesús García
Clinical Assistant, University of Navarra, Madrid, Spain

Henriëtte Kuipers
Isala hospitals, Zwolle, The Netherlands

Maria Steinberger
Head of Medical Physics LMU Hospital, Munich, Germany

Beatriz García
Specialist in Hospital Radiophysics. Lozano Blesa

As early career medical physicists ourselves, we know first-hand what the first years feel like. Our goal is simple: as representatives of early career professionals, we want to create sessions that we would have wanted to attend – practical, scientific, interactive and fun.

What to Expect

While we are still working on the programme to refine it according to the needs of early careers, several sessions are already being planned throughout the congress as part of the early career track (specifically 24-25th September). In summary, this reflects some of the activities:

- Session on mentoring regarding hot topics in Medical Physics,

- ePoster session focused on soft skills and professional development,

- a lively European debate and discussion on Medical Physics societies and ways of working across countries, with contributions from past and present EFOMP presidents.

We are also preparing other interesting sessions on themes such as funding opportunities in medical physics, mobility and collaboration across Europe, and "What I learned in my first years", which is about real-world insights shared by colleagues who are no longer during their traineeship and are willing to share their experience.

Building a network – not just following sessions
The Early Career track is all about connecting with others and enhancing growth. We are working to create dedicated meeting spaces, informal networking opportunities and social gatherings. This helps peers exchange experiences and build collaborations that can extend further than the few days of the congress. We aim to put the most weight on this – sometimes what makes a congress valuable isn't solely about what you hear/see, but the people you connect with.

And of course, this year's ECMP will take place in Valencia, a city known for its colourful atmosphere, historic streets, good food and rich culture. We are planning to give you a taste of this richness during the congress itself – but this will be left as a surprise for you to see during the congress.

Join us in Valencia
The Early Career track at the 2026 ECMP will be a great experience of connection whether it is your first congress or first years as a medical physicist as it will offer a space for questions and growth, making you feel part of the wider medical physics community. We hope that you will not only create new professional connections but also share a dozen small moments that you will carry with you in the future.

We invite you to follow the congress updates on the official website as the programme evolves, and get in touch with the Early Career SIG steering committee if you would like to contribute any ideas or suggestions for the sessions, or become involved. We can't wait to see you all there!

Katryna Vella is a Medical Physicist in Diagnostic and Interventional Radiology at Mater Dei Hospital, Malta. She is a steering committee member of the Early Career Special Group and part of the Early Career committee of the upcoming ECMP. Her interests centre around ethical technology.

Advancing End-to-End quality assurance in modern radiotherapy: Clinical Research Projects with RTsafe

The increasing complexity of modern radiotherapy, including stereotactic radiosurgery (SRS), single-isocenter multitarget (SIMT) techniques, Gamma Knife systems, and online adaptive MR-Linacs, demands robust and independent end-to-end verification. Patient-specific motion management, high geometric precision, and adaptive workflows introduce uncertainties that conventional QA methods may not fully capture.

RTsafe has focused on developing anthropomorphic phantoms and remote dosimetry audit solutions that enable commissioning, benchmarking, periodic end-to-end testing, and research applications across advanced treatment platforms. Recent scientific projects demonstrate how such tools can support clinical validation and standardization.

Dosimetric and positional validation of Gamma Knife Icon motion management

In collaboration with clinical partners, the RTsafe PRIME phantom incorporating radiochromic film was used to assess the dosimetric and geometric performance of Gamma Knife Icon plan adaptation and high-definition motion management (HDMM). (Han et al 2019) Thirteen motion and setup scenarios were investigated, including near-threshold displacements, coughing events, treatment interruptions requiring adaptation, and pitch errors up to 20°.

Results showed reliable dosimetric accuracy even under challenging motion conditions, supporting the robustness of the HDMM system and demonstrating the value of controlled, reproducible end-to-end testing for motion-sensitive SRS treatments.

Multicenter evaluation of SIMT SRS practices

A second project involved a multicenter study of 23 radiotherapy centers across Germany, Austria, and Switzerland to evaluate variations in infrastructure, planning, delivery, and QA for SIMT SRS. (Thomann et al 2025) Using a standardized PRIME phantom configuration with ionization chamber and polymer gel dosimetry and a common reference case, inter-institutional performance was compared.

The study revealed substantial variability in planning criteria, motion control, QA approaches, and platform usage. While consensus existed on high-resolution imaging and 6DoF setups, differences in execution highlighted the need for harmonized guidelines to improve reproducibility and safety. The work illustrates how standardized phantom-based testing can facilitate benchmarking and best-practice development across institutions.

End-to-end geometric accuracy of an adaptive MR-Linac workflow

For online adaptive MR-guided radiotherapy, three-dimensional dosimetry becomes essential to assess geometric accuracy. Using a gel-filled PRIME phantom and film inserts, investigators evaluated the adapt-to-shape workflow of a Unity MR-Linac. (Oolbekkink et al 2024) Three-dimensional gel measurements quantified spatial offsets, while film provided independent verification.

The system achieved high agreement between planned and delivered dose distributions, with a global 3%/3 mm gamma passing rate of 98.2% and sub-millimeter geometric accuracy (0.3 mm with gel, 0.6 mm with film). These findings support 3D gel dosimetry as a practical and precise method for comprehensive MR-Linac end-to-end validation.

Supporting safer, standardized radiotherapy

Together, these scientific projects demonstrate how independent, realistic phantom-based methodologies can strengthen commissioning, auditing, and research in contemporary radiotherapy. By enabling reproducible end-to-end verification across platforms, such approaches contribute to safer treatments, improved confidence, and greater standardization across the medical physics community.

References

Han E Y, Luo D, Kim J O, Tharp K, Wen Z and Briere T M 2019 Dosimetric validation of the Gamma Knife® IconTM plan adaptation and high-definition motion management system with a motorized anthropomorphic head phantom J. Radiosurgery SBRT 6 217 Online: https://pmc.ncbi.nlm.nih.gov/articles/PMC6774480/

Oolbekkink S, Wolthaus J W H, van Asselen B and Raaymakers B W 2024 3D gel dosimeter assessment for end-to-end geometric accuracy determination of the online adaptive workflow on the 1.5 T MR-linac Phys. Imaging Radiat. Oncol. 32 100664

Thomann B, Fechter T, Fischer J, Runz A, Roers J, Ludwig U, Grehn M, Grohmann M, Ziemann C, Judge M, Baus W, Grahle M, Walke M, Bathen B, Köhn J, Käthner P, Shariff M, Matthis R, Fleckenstein J, Großmann S, Streller T, Howitz S, Priegnitz M, Weigel R, Winkler P, Blanck O, Schmitt D, Beck J, Machein M, Pappas E, Popp I, Reiner M, Karger C P, Moustakis C, Bock M, Grosu A L and Baltas D 2025 Multicenter multiplatform pattern-of-practice analysis of single-isocenter multitarget stereotactic radiosurgery Strahlenther. Onkol. 201 953–62 Online

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.

Remote Dosimetry Services

The Remote Dosimetry Services package forms a powerful tool for quality improvement, promoting best practice and assuring high quality treatments by outsourcing the routine quality control program of your radiation oncology QMS using a cost and time-effective solution.

Key Features

- High-quality treatments
- Effortless high-end QA
- Cost & time effective solution

REMOTE DOSIMETRY SERVICES

RTsafe

info@rt-safe.com

www.rt-safe.com

Advantages of Dental X-Ray Testing With Mako From RTI

Dental X-ray examinations are a routine part of dental care worldwide. Many patients are exposed to dental X-rays regularly throughout their lives, often during standard check-ups and follow-up visits. While intraoral examinations typically involve relatively low radiation doses, higher doses are used for panoramic imaging and Cone Beam Computed Tomography (CBCT).

Because dental X-ray imaging is performed on healthy individuals of all ages and often repeatedly over time, it is essential that X-ray units deliver the correct output — neither too high nor too low. Good oral health is closely linked to overall well-being and has been associated with a reduced risk of systemic conditions such as cardiovascular disease, infections, and dementia. Accurate and reliable dental imaging therefore plays an important role in modern healthcare, and regular testing and verification of dental X-ray equipment are key to ensuring patient safety, consistent image quality, and regulatory compliance.

Mako – One Measurement, Complete Insight
The RTI Mako multimeter is designed to simplify dental X-ray testing without compromising accuracy. Using a single exposure and an R/F Probe positioned in the X-ray beam, Mako measures all key parameters needed for dental QA:

- kV
- Exposure time
- Dose
- Dose rate
- Filtration
- Half-Value Layer (HVL)
- Pulses

Measurement data is transferred wirelessly via Bluetooth to a smartphone, tablet, or laptop. This eliminates cables, reduces setup time, and allows the user to maintain a safe distance from the radiation source (see Figure 1).

Figure 1. Mako and options of displays

Intraoral X-ray – Automatic Waveform Compensation

Intraoral X-ray testing with Mako is straightforward: place the probe in the beam and expose. Modern dental X-ray systems typically use high-frequency (DC/HF) generators with stable output, while older systems may use single-phase waveforms.

Some multimeters require manual waveform compensation for the single-phase. Mako does not. The probe automatically detects the generator type and applies the appropriate compensation, minimizing user input and reducing the risk of measurement errors.

CBCT – Safe, Cable-Free Rotation

CBCT testing requires the multimeter to be mounted on the detector surface, ensuring free and unobstructed rotation during exposure (see Picture 2). With the Mako Panoramic Holder, the entire setup is securely attached to the detector — no hanging cables, no risk of collisions, and no damage to multimeters or displays.

All measurement data is transmitted wirelessly to the user's display of choice. Mako always records and displays full kV and dose-rate waveforms, which is particularly valuable for CBCT systems where output may vary during rotation, for example when the tube passes behind the patient's neck.

Figure 2. Recommended mounting of Mako for CBCT and panoramic systems

Panoramic Imaging – Precision in Narrow Beams

Panoramic dental X-ray testing presents a unique challenge due to the very narrow X-ray beam, often only a few millimeters thick. Mako addresses this with a dose detector measuring just 0.9 mm, making it easier to fully irradiate the sensor.

If the probe is positioned too close to the beam edge, Mako's unique position guidance system directs the user toward the beam center (see Picture 3). The Panoramic Holder allows fine lateral adjustment of the probe without disturbing the overall setup.

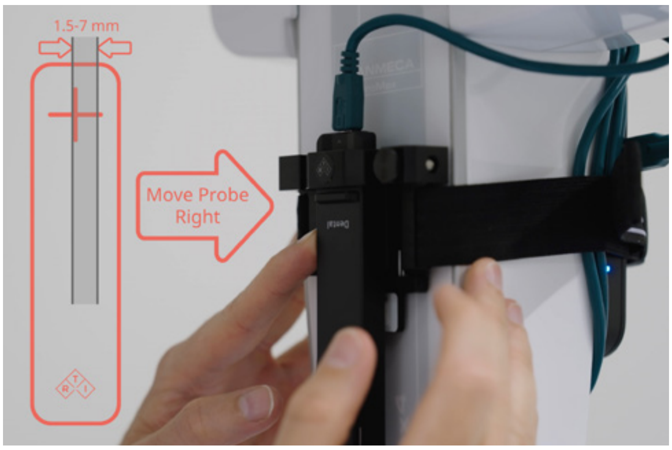


Figure 3. Mako's unique position guidance system

Adapts to Local Requirements

Regulatory requirements for dental X-ray testing vary by country. Some demand Dose Area Product (DAP) measurements, others require CTDI. Mako is designed to adapt.

A wide range of ion chambers and accessories can be connected to the Mako system as needed, enabling measurement of parameters such as:

• Tube current (mA, mAs)
• Monitor luminance and ambient light
• Dose Area Product (DAP)
• Computed Tomography Dose Index (CTDI)

Accessories can be added as requirements evolve, allowing Mako to adapt to both the application and the user.

A Flexible Solution for Dental X-ray QA

Whether testing intraoral units, panoramic systems, or CBCT scanners, Mako provides a fast, accurate, and future-ready solution for dental X-ray quality assurance — combining wireless simplicity with advanced measurement capability.

Björn Cederquist is a Sweden-based medical physicist who joined RTI Group in 2008. Starting in R&D with detector design, he moved into sales and technical support in 2009. Today, he supports customers across mainland Europe, Japan, and South Korea, combining strong technical expertise with practical clinical insight.

Automating What Matters: Intelligent Dose Rate & Collimator Speed QA for RapidArc Dynamic Delivery

Smarter Automation for RapidArc Dynamic QA
Quality assurance (QA) for volumetric modulated arc therapy (VMAT) requires verification of multiple dynamic parameters, including dose rate modulation, multileaf collimator (MLC) motion, gantry rotation, and collimator speed. Manual analysis of these parameters can be time-consuming and prone to variability. This article describes a new automated image-based analysis capability within Radformation's RadMachine Image Analysis workspace for verification of dose rate and collimator speed during Varian RapidArc® Dynamic delivery. The enhancement is designed to support consistent, repeatable, and efficient QA workflows in clinical radiation oncology.

Why RapidArc Dynamic QA Demands Smarter Automation
VMAT delivery techniques, such as Varian RapidArc Dynamic mode, rely on coordinated variation of dose rate, gantry speed, collimator rotation, and MLC motion. Accurate synchronization of these parameters is essential to ensure the intended dose distribution is delivered. As delivery complexity increases, QA methodologies must evolve to maintain reliability while minimizing manual workload.

Conventional QA approaches for RapidArc Dynamic delivery frequently involve manual data extraction, spreadsheet-based calculations, and secondary analysis tools. These processes can introduce inefficiencies and increase the risk of user-dependent variability. Automation of data analysis and documentation is therefore a key objective in modern QA system design.

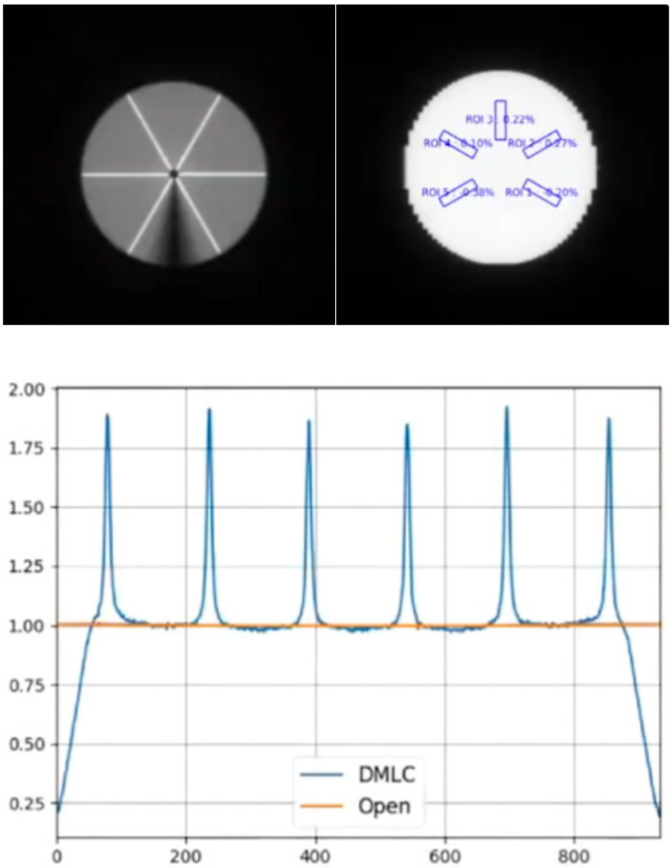


Figure 1. Drag and drop two Dose Rate Collimator Speed (DRCS) images into RadMachine and analyse them. RadMachine then generates an image showing the region of interest in accordance with the DRCS specifications.

How RadMachine Simplifies Complex RapidArc Dynamic QA
RadMachine has introduced an automated VMAT dose rate and collimator speed analysis within its Image Analysis workspace. The functionality is based on analysis of images acquired during RapidArc Dynamic arc delivery and is integrated into existing RadMachine workflows.

The automated analysis evaluates the following parameters:

- Dose rate stability throughout beam intensity modulation
- Collimator rotation speed consistency during arc delivery
- Gantry rotation stability across the full arc

Results are evaluated against predefined tolerances and stored directly within the RadMachine system to support longitudinal trending and compliance documentation.

From Image to Insight: A Faster QA workflow
The automated analysis follows a standardised workflow:

1. Image acquisition during RapidArc Dynamic delivery using routine QA imaging methods.
2. Image transfer to the RadMachine Image Analysis workspace, either manually or via Local Agent Automation.
3. Automated evaluation of dose rate, collimator speed, and tolerance compliance.
4. Result visualization and storage, enabling long-term performance trending and audit-ready documentation.

No manual calculations or external analysis software are required.

Driving Confidence in RapidArc Dynamic Delivery
RapidArc Dynamic delivery places stringent requirements on mechanical and dosimetric system performance. Even small deviations in dose rate modulation or collimator motion may introduce uncertainty in delivered dose. Early detection of such deviations is therefore critical for maintaining treatment accuracy.

By automating analysis and standardizing evaluation criteria, RadMachine reduces reliance on manual interpretation and improves consistency across users and sites. Centralised storage and trending further support early identification of performance drift and facilitate regulatory and accreditation compliance.

What You Gain with Automated RapidArc Dynamic Analysis:

- Automated analysis of dose rate and collimator speed during Dynamic VMAT delivery
- Reduction of manual effort and user-dependent variability
- Consistent, repeatable results
- Integrated trending and documentation to support long-term machine performance monitoring
- Compatibility with existing QA workflows, without the need for additional tools

Raising the Standard for RapidArc Dynamic Machine QA
The introduction of automated dose rate and collimator speed analysis for RapidArc Dynamic delivery within RadMachine represents a step toward more standardised and efficient VMAT QA. By combining image-based evaluation with automated analysis and centralised data management, the system supports reliable verification of complex delivery parameters while reducing the burden of manual QA processes.

If RadMachine can help improve Machine QA in your department, you can request a demo to learn more.

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

NEW

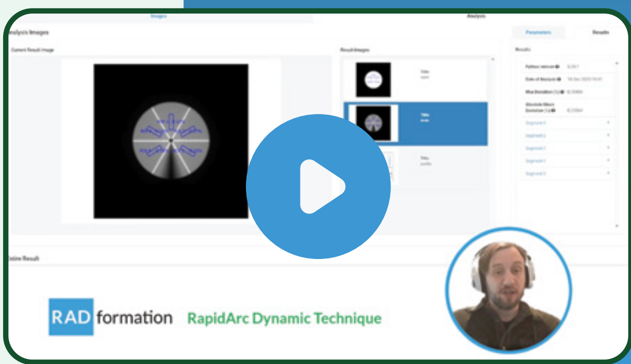
RadMachine

Automated Dose Rate & Collimator Speed Analysis for Varian's RapidArc Dynamic delivery

Eliminate manual QA reviews for RapidArc Dynamic QA. This automation replaces spreadsheets and external tools, catches deviations early, and frees your team to focus on higher-value clinical work.

The new test analyzes images captured during arc delivery to confirm:

- **Dose rate remains within tolerance,** even as the machine modulates the beam intensity.
- **Collimator rotation speed remains consistent** throughout the arc.
- **Gantry rotation speed remains stable** across the full arc.



RAD formation

Watch a 1-minute video of this feature

PTW THE DOSIMETRY COMPANY

Bye-bye false alarms: How Monte Carlo dose calculations make patient-specific QA more efficient

In everyday clinical practice, medical physics teams face a central challenge when verifying radiotherapy treatment plans: patient-specific quality assurance (PSQA) requires the highest level of accuracy, yet it also consumes valuable resources. Independent secondary dose calculations (ISDC) offer a clear advantage over traditional phantom-based measurements: they run automatically in the background and provide fast, precise results. The choice of algorithm used for independent dose calculations therefore has a major impact on how well patient safety and workflow efficiency can be combined.

A 2025 study by L. Hoffmann et al.[1], published in the Journal of Applied Clinical Medical Physics, compared the Monte Carlo algorithm SciMoCa (as implemented in VERIQA RT MonteCarlo 3D) with the analytical convolution–superposition algorithm used in Mobius3D. The results illustrate how strongly the choice of algorithm influences daily clinical practice.

Why the Choice of Algorithm Matters

The purpose of PSQA is to detect errors and provide insight into their origin. Pre-treatment dose verification can be carried out in accordance with DIN 6875-3 or AAPM TG-218/219 either by measurements (e.g. using a phantom or EPID) or by secondary dose calculations. These two verification methods differ significantly in terms of accuracy and workload.

Dose calculations allow automated plan verification and mainly require server and computing resources rather than staff time. Most treatment plans that are clinically uncritical and pass the secondary dose calculation do not require any additional effort from the medical physics team.

Acceptance criteria typically include Gamma Pass Rate (GPR) and dose difference. However, these metrics are only meaningful when tight tolerance limits (action levels) are applied. Problems arise when the algorithm used for secondary dose calculation has a high variance: greater variance leads to more plans being marked as out-of-tolerance, resulting in more false alarms that must be reviewed manually.

In such cases, clinics need to determine whether to maintain strict acceptance criteria and take on the additional review workload, or to relax the tolerances to reduce workload, operating with less conservative safety margins. A precise algorithm, by contrast, enables both — tight tolerances and reliable PSQA with less overall effort.

What The Study Shows

Hoffmann et al. analysed 100 patient plans across 20 clinical cases, all planned with Acuros XB. The plans were recalculated using both the analytical algorithm in Mobius3D and the Monte Carlo-based SciMoCa algorithm implemented in VERIQA RT MonteCarlo 3D.

The results are clear — as summarised in the study's conclusion:

"Monte Carlo dose calculation provides a significant benefit for ISDC as patient-specific quality assurance, allowing substantially more stringent acceptance criteria than an analytical algorithm."

As shown in Figs. 6b (Mobius3D vs Acuros XB) und 6d (SciMoCa vs Acuros XB) of the publication, the differing axis scales alone illustrate how widely the analytical algorithm's results scatter: Mobius3D exhibits dose differences of up to 6% and GPR values as low as roughly 30%. In contrast, SciMoCa achieves pass rates above 95% with only minor deviations close to the tolerance limit.

These results demonstrate that the more precise Monte Carlo algorithm used in VERIQA RT MonteCarlo 3D supports stricter acceptance criteria while producing significantly fewer false alarms — reducing the overall PSQA workload.

Practical Benefits for Clinical Workflows

In practice, the choice of dose calculation algorithm is also influenced by cost and resource considerations. Analytical algorithms are often supplied directly with the linear accelerator, which explains their widespread clinical adoption. However, this advantage diminishes in daily operation: analytical methods tend to produce more false alarms, require time-consuming reviews, and force clinics to use wider tolerances if workload is to be reduced.

By contrast, the effort required to commission a Monte Carlo algorithm is often overestimated. During the commissioning of VERIQA RT MonteCarlo 3D, PTW provides practical support — from implementation through to routine clinical use.

VERIQA - A Future-Proof Platform

VERIQA uses clinically validated high-end algorithms across all modules and supports highly complex systems and treatment modalities such as Elekta Unity, ZAP-X, CyberKnife® and TomoTherapy®. All VERIQA methods provide true 3D dose verification and comply with current protocols and guidelines.

The platform also allows different verification methods to be combined effectively in clinical workflows. By integrating VERIQA RT MonteCarlo 3D for pre-treatment verification with EPID-based in-vivo dosimetry (VERIQA RT EPID 3D in vivo) during treatment, all relevant error sources in the treatment chain — including patient-specific errors — can be reliably detected.

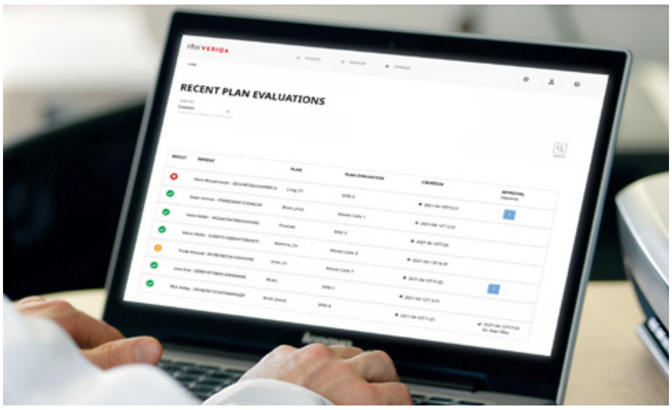


Figure 1. VERIQA RT MonteCarlo 3D: Precise Monte Carlo-based 3D dose verification with fully automated workflows from plan import to calculation, evaluation and reporting.

VERIQA RT MonteCarlo 3D: Precise Monte Carlo-based 3D dose verification with fully automated workflows from plan import to calculation, evaluation and reporting.

As a highly automated and modular platform, VERIQA increases workflow efficiency and adapts flexibly to clinical requirements. Workflows can be tailored to individual needs, implementations can be carried out step by step, and additional licences, devices or specialised applications can be added as needed — all without changing systems.

Conclusion

The results of Hoffmann et al. show impressively that Monte Carlo-based dose calculation improves the precision of patient-specific QA while reducing workload. Clinics using VERIQA RT MonteCarlo 3D benefit from fewer false alarms and can apply stricter acceptance criteria — increasing patient safety.

In addition, Monte Carlo dose calculation offers a specific advantage for online-adaptive radiotherapy (oART): because measurement-based verification is no longer feasible in oART workflows, the daily adaptive plan can be verified quickly and accurately just before treatment using VERIQA RT MonteCarlo 3D.

References:

[1] Hoffmann L, Linaa M-B, Møller DS, Independent secondary dose calculation for patient-specific quality assurance: Quantitative benefit of Monte–Carlo and custom beam modeling, Journal of Applied Clinical Medical Physics 26, e70265 (2025). https://doi.org/10.1002/acm2.70265

Nicole Brand is a Product Manager at PTW Freiburg with a Master's degree in Physics from the University of Tübingen and accreditation as a medical physicist. She previously worked as a clinical physicist at Schwarzwald-Baar Klinikum Villingen-Schwenningen. At PTW, she is responsible for developing and clinically validating the VERIQA platform.

Radiation Therapy with Precision: LUNA 3D

Figure 1. UKM_LUNA_3D - Alicia Aschmann

In 2025, the Department for Radiotherapy and Radiation Oncology of the University Hospital Münster (UKM) in Germany introduced Surface Guided Radiation Therapy (SGRT) using LUNA 3D from LAP.

Modern radiotherapy increasingly relies on precise patient positioning and motion management to deliver highly conformal treatments while sparing healthy tissue. At the UKM, this challenge is now being addressed with the clinical introduction of LUNA 3D SGRT, to further enhance accuracy and patient safety, particularly for treatments affected by respiratory motion.
UKM Münster is one of Germany's leading university hospitals, combining research, teaching, and patient care across a wide range of medical disciplines. In radiation oncology, UKM is recognized for its strong integration of clinical expertise, medical physics, and technological innovation—an environment well suited for the clinical adoption of new surface-guided radiotherapy solutions.

Advancing Gentle Precision

The LUNA 3D system uses sensitive optical cameras to continuously monitor the patient's surface in real time. By comparing the live surface data with the reference position from treatment planning, irradiation can be enabled when the actual position matches the reference position in predefined tolerances. This approach allows for precise positioning based on the patient's actual anatomy rather than relying solely on external markers or surrogate signals. As a result, skin markings for patient setup can increasingly be avoided, improving both workflow efficiency and patient comfort.

Patients with breast cancer, lung cancer, and tumours affected by respiratory motion in the abdominal region can particularly benefit from this technology. During deep inspiration breath-hold (DIBH) treatments, patients can actively participate by monitoring their breathing on a visual display. This patient-centered approach supports reproducibility and enhances overall treatment quality.

From a clinical leadership perspective, the introduction of LUNA 3D marks an important milestone for UKM.

"With the LUNA 3D system, we are relying on state-of-the-art technology that enables particularly precise and gentle radiotherapy for our patients with tumours in the thoracic and abdominal regions. We are strengthening our leading position in oncological care and offering treatment at the highest international level," explains Professor Hans Theodor Eich, Director of the Department for Radiotherapy and Radiation Oncology at UKM.

Turning Innovation into Clinical Impact

For LAP, the implementation of LUNA 3D at UKM represents more than a technology installation. It reflects a close and trust-based partnership with a leading academic institution, built on shared goals of clinical excellence and continuous innovation. By working closely with UKM's clinical and physics teams, LAP supports the translation of advanced motion management concepts into daily clinical practice, contributing to safer, more precise radiotherapy treatments across Europe.

With the clinical implementation of LUNA 3D now at UKM Münster, patients benefit from increased precision, safety, and comfort, while medical physicists gain an additional tool for managing respiratory motion. This collaboration underscores LAP's commitment to partnering with leading centres to shape the future of high-precision radiotherapy.

Hans Theodor Eich is a Professor of Radiation Oncology and Director of the Department of Radiation Therapy and Radio-Oncology at the University Hospital Münster, Germany. He specializes in modern radiotherapy and multimodal cancer treatment and is actively involved in international clinical research, particularly in the field of lymphoma and precision oncology. His work focuses on integrating advanced technologies and evidence-based strategies to improve treatment quality and patient outcomes.

Milestone

Celebrating 100+ LUNA 3D SGRT systems worldwide

Get more information:
www.lap-laser.com

Qaelum

Risk Communication in Medical Imaging: Key Issues and Current Approaches

Figure 1. Effective dose (top) and organ doses (bottom) as displayed for an exam in DOSE.

Risk in medical imaging, particularly the balance between diagnostic benefit and potential harm from ionizing radiation, has long been a topic of scientific discussion. Recent media coverage of the potential radiation induced cancer risks due to medical exposure has refocused the scientific community on the challenge of meaningfully assessing and communicating risk.

This topic was addressed in a physics session at the 2025 Annual Meeting of the Radiological Society of North America, titled "*Un" risky* Business: Easing the Uncomfortable Relationship Between Risk and Benefit in Medical Imaging [1].

In this session, total risk was defined as the sum of **clinical risk** and **radiation risk**, emphasizing that risk assessment cannot be based on radiation exposure alone. **Clinical risk** is often a qualitative measure, defined as misdiagnosis and often based on the radiologist's subjective opinion on the image quality. To address this limitation, a mathematical model of clinical risk was presented, incorporating quantitative parameters including disease prevalence within the imaged population, differences in survival associated with correct versus incorrect diagnoses, life expectancy loss resulting from misdiagnosis, and the ratio of false-positive to true-positive outcomes. The latter was associated with the computed tomography (CT) dose index or CTDIvol, i.e., the concept that higher dose results in better image quality. Radiation risk was defined using a risk index according to the United States National Research Council's Committee to Assess Health Risks from Exposure to Low Levels of Ionizing Radiation (BEIR VII) framework, which offers patient age- and sex-specific lifetime attributable risk (LAR) estimation methodology [2]. Radiation risk also incorporated disease prevalence and false-positive to true-positive ratios [3].

The combined model was evaluated on a cohort of one million digital twins simulating a liver cancer scenario, with simulations based on survival data from the U.S. National Cancer Institute. Results demonstrated that clinical risk, expressed as mortality per 100 patients due to misdiagnosis, was approximately five times greater than radiation risk. This imbalance was further highlighted through comparisons of mortality risks associated with different aspects of cancer care. While radiation-induced cancer risks are frequently discussed, mortality associated with surgical intervention and chemotherapy is substantially higher, with reported rates of approximately 1.32% for surgery compared with 0.04% for radiation-induced malignancy [4]. Despite this disparity, radiation risk continues to dominate both scientific discourse and public perception, often without adequate contextualization.

Speakers in the session emphasized that effective risk management in medical imaging requires rigorous **dose and image quality optimization**, guided by principles that are task-, patient-, procedure-, and equipment-specific [4]. Finally, the importance of **clear and balanced communication** was stressed, underscoring that patient communication should be sensitive, informed, and engaging [5].

In the context of dose management, radiation risk remains the most relevant measure for guiding optimization efforts and communication strategies. In response to customer demand, a LAR calculation was recently implemented within Qaelum's dose management system, DOSE. This implementation follows the International Commission on Radiological Protection (ICRP) methodology for LAR estimation, assuming a dose and dose-rate effectiveness factor (DDREF) of 2 for solid cancers and applying a Euro-American composite population model [6].

LAR calculations are conventionally based on organ-specific doses and LAR coefficients, but effective dose offers a simplified, alternative approach that has been employed previously [7-9]. To evaluate the comparability of these approaches, LAR estimates based on organ dose ($LAR_{OrganDose}$) and effective dose (LAR_{EfDose}) were assessed in a cohort of 19,248 spiral CT acquisitions of standard anatomical regions (abdomen, chest, and head) [10]. Across all examination types, LAR_{EfDose} tended to yield higher values than $LAR_{OrganDose}$, with the largest discrepancies observed for head acquisitions. Both effective dose and corresponding LAR values were 2-13 times lower for head CT compared with chest and abdominal CT.

Differences between LAR estimation methods were more pronounced in younger patients, consistent with age-dependent risk coefficients. The median difference between $LAR_{OrganDose}$ and LAR_{EfDose} was -0.006 cases per 100 patients for those under 50 years of age, compared with -0.001 cases per 100 patients for those aged 50 years and older. Differences were largely attributable to dose calculation assumptions: effective dose is derived from dose-length product (DLP) and therefore accounts for scan length, whereas organ dose calculations rely on CTDIvol and assume standardized scan ranges for a given anatomical region (Figure 1). Consequently, examinations with extended scan lengths produced larger discrepancies between the two approaches. Overall, differences in LAR estimates ranged from 0.001 to 0.003 cases per 100 patients, indicating that both methods provide broadly comparable estimates, with the effective-dose-based approach yielding a more conservative risk assessment.

Although such radiation risk estimates are derived from population-based epidemiological models and are not intended for application at the individual patient level, there remains a growing need within the scientific and clinical communities for risk metrics that extend beyond traditional dosimetric quantities and can be understood by non-experts. When implemented within automated dose management systems, such metrics can provide consistent indicators of radiation risk. Importantly, the interpretation and application of radiation risk metrics should be situated within a broader clinical risk-benefit framework that accounts for the often substantially greater risks associated with misdiagnosis and therapeutic interventions, ensuring that radiation risk is neither underestimated nor disproportionately weighted in clinical decision-making.

References

[1] Samei E. S5-CPH14AAPM/RSNA Physics Tutorial 2: “Un”risky business: Easing the uncomfortable relationship between risk and benefit in medical imaging. Presented at: Radiological Society of North America Annual Meeting (RSNA 2025); November 30, 2025; Chicago, IL. Available at: https://cattendee.abstractsonline.com/meeting/21232/Session/493

[2] National Research Council (NRC) Committee to Assess Health Risks from Exposure to Low Levels of Ionizing Radiation. Health Risks from Exposure to Low Levels of Ionizing Radiation: BEIR VII Phase 2. National Academy of Sciences; Washington, DC: 2005.

[3] Ria F. Theoretical Approach to Risk/Benefit Assessment. Radiological Society of North America Annual Meeting, RSNA 2025, November 30-December 4, 2025; Chicago, IL.

[4] Trianni A. From a Physicist Perspective. Radiological Society of North America Annual Meeting, RSNA 2025, November 30-December 4, 2025; Chicago, IL.

[5] Frush D. From a Radiologist Perspective. Radiological Society of North America Annual Meeting, RSNA 2025, November 30-December 4, 2025; Chicago, IL.

[6] ICRP 147: ICRP, 2021. Use of dose quantities in radiological protection. ICRP Publication 147. Ann. ICRP 50(1).

[7] Hanley M, Koonce J, Bradshaw M. X-ray Risk. Accessed February 5, 2025. https://www.xrayrisk.com/.

[8] Wurster, C.D., Winter, B., Wollinsky, K. et al. Intrathecal administration of nusinersen in adolescent and adult SMA type 2 and 3 patients. J Neurol 266, 183–194 (2019). https://doi.org/10.1007/s00415-018-9124-0

[9] Aw-Zoretic J, Seth D, Katzman G, Sammet S. Estimation of effective dose and lifetime attributable risk from multiple head CT scans in ventriculoperitoneal shunted children. Eur J Radiol. 2014 Oct;83(10):1920-4. doi: 10.1016/j.ejrad.2014.07.006. Epub 2014 Jul 16. PMID: 25130177; PMCID: PMC4623705.

[10] Romanyukha A, Vignero J, Bosmans H, Fitousi N. Comparison of radiation risk assessment methodologies for standard CT exams. European Congress of Radiology, ECR 2025, 26 February- 2 March 2025, Vienna, Austria.

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 Development 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.

Scientific Dialogue in Action: Reflections from QADS 2026

Quality assurance in radiation oncology continues to evolve alongside the technologies it supports. Adaptive workflows, stereotactic techniques, theranostics, and increasing automation are transforming how physicists approach verification, safety, and efficiency in clinical practice. Against this backdrop, the **15th Quality Assurance Dosimetry Symposium (QADS)** convened in Rome, Italy, bringing together experts from across the global medical physics community to examine how QA must adapt to meet the demands of modern radiotherapy.

This year's meeting welcomed **approximately 250 attendees from 38 countries**, creating a truly international forum for scientific exchange. The program featured **25 speakers representing 12 countries**, reflecting the global collaboration that increasingly defines progress in medical physics. While QADS is hosted by Sun Nuclear, the meeting maintains its emphasis on open scientific discussion, with presentations covering a wide range of technologies, methodologies, and perspectives across the QA landscape.

A Program Designed Around Emerging Challenges

The scientific tracks closely mirrored the issues shaping clinical physics practice. Sessions addressing machine and patient QA, in-vivo dosimetry, safety and guidelines, theranostics, and AI-driven automation created a program in which presentations complemented one another and highlighted emerging directions in QA science.

The keynote presentation by David Barbee, Ph.D., DABR (NYU Langone Health) generated significant discussion. Drawing on early clinical experience with the newly introduced Daily QA™ 4 Pro device, Dr. Barbee explored how integrated dosimetry and imaging-based verification may support more comprehensive daily machine QA. Using measurement data and clinical observations, he highlighted opportunities to improve data visibility and streamline workflows, sparking continued dialogue throughout the meeting.

Figure 1: Keynote Presentation: Independent Measurements vs MPC by David Barbee, Ph.D.

Another highlight was a lively debate addressing a question increasingly discussed in the field: "Does Properly Commissioned Delivery Techniques Render Routine Measurement PSQA Obsolete?" The session featured Dirk Verellen, Ph.D. (Iridium Netwerk, ZAS) and Victor Hernandez Masgrau, Ph.D. (Hospital Universitari Sant Joan de Reus). Their discussion examined the balance between advanced commissioning approaches, predictive modeling, and the continued role of measurement-based patient-specific QA—capturing a central tension in modern physics practice.

Expanding Horizons: Theranostics and Emerging Modalities

Figure 2. Dr. John Sunderland presentation in the Theranostics track, titled, PDIB Project for Standardizing Clinical RPT Practice.

A notable addition to this year's program was a dedicated Theranostics track, reflecting the expanding role of radiopharmaceutical therapies in oncology. For many attendees, theranostics represents a rapidly developing area intersecting with radiation oncology but introducing unique dosimetric and workflow challenges.

Speakers focused on translating complex nuclear medicine physics concepts into practical clinical understanding. A panel discussion featuring three internationally recognized experts proved particularly engaging, offering valuable insights into how QA principles may evolve as theranostic therapies become more widely adopted.

Artificial Intelligence and Automation in QA

Another major theme throughout the meeting was the role of AI and automation in shaping the future of quality assurance. Presentations explored topics ranging from automated QA workflows and anomaly detection to validation challenges associated with algorithm-driven systems. These sessions generated strong interest among attendees, reflecting both excitement and careful scrutiny as AI technologies move toward clinical implementation.

Beyond the formal sessions, the QADS15 atmosphere was notably collaborative. Breaks and receptions encouraged discussion among physicists, researchers, and industry experts.

articipants cited varied motivations for attending. Alisson Dal Col, from Hospital São Vicente de Paulo in Brazil, noted that he came to learn about developments in patient-specific transit dosimetry QA. Carmen Sawyers, from TrueNorth Medical Physics in the United States, emphasized the value of international collaboration, explaining that she attended "to network with colleagues, learn about industry trends, and stay up to date."

For Jie Shi, who has worked at Sun Nuclear for more than 30 years and organized the first thirteen QADS meetings, the continued enthusiasm surrounding the symposium reflects its original purpose. "The goal of QADS has always been to bring the community together to discuss the latest ideas and innovations related to patient safety and quality," he said.

Looking Ahead

Over fifteen installments, QADS has evolved alongside the field it serves, expanding as new technologies and clinical approaches reshape radiation oncology. Yet its core mission remains unchanged: to provide a forum where physicists can openly discuss challenges, share solutions, and explore ideas grounded in scientific evidence.

As QA continues to evolve, integrating automation, predictive analytics, and emerging treatment modalities, forums like QADS remain vital in supporting the global medical physics community and shaping the future of quality assurance in radiation oncology.

Dayna Bodensteiner, RTT, CMD, is the Clinical Marketing Manager for Mirion Medical and served as Program Director for the Quality Assurance Dosimetry Symposium (QADS). With a clinical background in medical dosimetry and extensive experience in the radiation oncology industry, she works closely with physicists and clinicians to support technologies and initiatives that advance quality assurance and patient safety.

SIEMENS Healthineers

Transforming Patient Setup: Institute Verbeeten's Tattooless and Maskless Workflow with IDENTIFY Across True-Beam, Halcyon, and Ethos.

Institute Verbeeten in Tilburg, The Netherlands, has redefined patient centered Radiation Oncology by fully implementing tattooless and largely maskless workflows using the IDENTIFY Surface Guided Radiation Therapy (SGRT) system across TrueBeam, Halcyon, and Ethos platforms. Their work offers valuable insights for Medical Physicists seeking to enhance patient comfort, streamline daily operations, and maintain precise setup accuracy.

From Conventional Setups to Patient Friendly Innovation

Before 2019, patient positioning relied on CT imaging, permanent tattoos, and immobilization face masks. These approaches supported accurate localization yet caused discomfort, anxiety, and long term cosmetic concerns. Aiming to improve patient experience without compromising precision, the clinic began evaluating SGRT technology as part of an effort to modernize treatment workflows.

Implementation and Workflow Evolution

IDENTIFY was installed on all Varian linear accelerators, followed by extensive accuracy testing, end to end validation, workflow refinement, and safety risk analysis. Clinical use began in March 2020 for whole brain patients, quickly expanding to multiple indications as confidence in maskless positioning grew.

"IDENTIFY shows you the patient's entire 3D surface and a large field of view for accurate positioning. We hardly ever have to touch the patient," says Medical Physicist Marion Essers.

Clinical Impact: Fully Tattoo less Treatments

By January 2023, Institute Verbeeten achieved a completely tattoo less workflow for all disease sites. Masks are no longer required for whole brain, palliative vertebrae, glioblastoma, and several head and neck cases. Patients report relief from avoiding permanent tattoos—many previously sought removal—and from the elimination of maskrelated anxiety. and neck cases. Patients report relief from avoiding permanent tattoos—many previously sought removal—and from the elimination of mask related anxiety. "IDENTIFY gives us a patient-friendly option without tattoos or masks. Setup is simple and we re-image less," Marion Essers explains.

Technical Insights: Liver SBRT and HyperArc SRS

The center treats approximately 20 liver SBRT patients annually using a Dutch protocol of 75 Gy in up to eight fractions with a 5 mm PTV margin. IDENTIFY supports high precision positioning through intrafraction monitoring and realtime motion thresholds of 3 mm translation and 2° rotation. Combined with CBCT verification and SGRT reference updates, most liver SBRT sessions, including setup, take around 20 minutes on TrueBeam. Workflow improvements have enabled some treatment slots to be reduced to 10 minutes for other indications with precision positioning through intrafraction monitoring and real time motion thresholds of 3 mm translation and 2° rotation. Combined with CBCT verification and SGRT reference updates, most liver SBRT sessions, including setup, take around 20 minutes on TrueBeam. Workflow improvements have enabled some treatment slots to be reduced to 10 minutes for other

For cranial SRS with HyperArc, the clinic continues using the Qfix Encompass mask. IDENTIFY, however, enhances confidence in dose accuracy by detecting subtle patient motion prior to CBCT, supporting conformity and sparing healthy tissue even in multi lesion cases.

Operational Benefits and Future Directions

SGRT enabled workflows have increased scheduling flexibility, reduced imaging demands, and shortened overall treatment times. The team is now exploring further automation, including automatic couch shifts and automated beam hold functionality, to continue refining safety and efficiency.

Conclusion

Institute Verbeeten's experience shows that tattooless, largely maskless workflows enabled by IDENTIFY are accurate, patient friendly, and operationally efficient. On Halcyon and Ethos machines, most free breathing cases can now be treated with IGRT in just 10 minutes. Their success illustrates how SGRT elevates patient experience while supporting high quality radiation delivery across a broad range of treatment sites.

Learn more about IDENTIFY

Michael Stead is the Head of ROS Marketing, EMEA for the Varian business line in Siemens Healthineers. With over 20 years of experience in the Medical Device industry, he is passionate about driving innovation in Radiation Oncology and has helped to bring advanced treatments such as SGRT into routine clinical practice. In addition, Michael is a named inventor on multiple patents.

Insights from a Survey on Priorities in Dental Imaging Physics

An Update from the Dental Imaging Special Interest Group 'Dental Imaging'

Dental imaging continues to evolve, bringing both opportunities and challenges for professionals working across clinical practice, research, regulation, and industry. To help understand which topics within this domain are most pertinent, the European Federation of Organisations for Medical Physics (EFOMP) Special Interest Group (SIG) on Dental Imaging recently conducted a survey among its members. The findings have guided the formation of four focus groups within the SIG, each centred on a key priority area for the coming years.

The survey received 41 responses from a diverse group of professionals. Most respondents identified as medical physicists or biomedical engineers, followed by clinicians, regulatory experts, industry partners, and other contributors (Figure 1). This diversity reflects the multidisciplinary nature of dental imaging and the importance of involving both users and developers of imaging technology in future actions.

Respondents were asked to judge various areas in dental imaging physics in terms of their perceived relevance, both by ranking them in order of priority (Figure 2) and by assessing an importance level based on a 7-point scale (Figure 3). While opinions varied, an overall alignment across professions was found, with image quality, dosimetry, and optimisation consistently appearing near the top. The highest-ranked topics included image quality metrics and requirements,

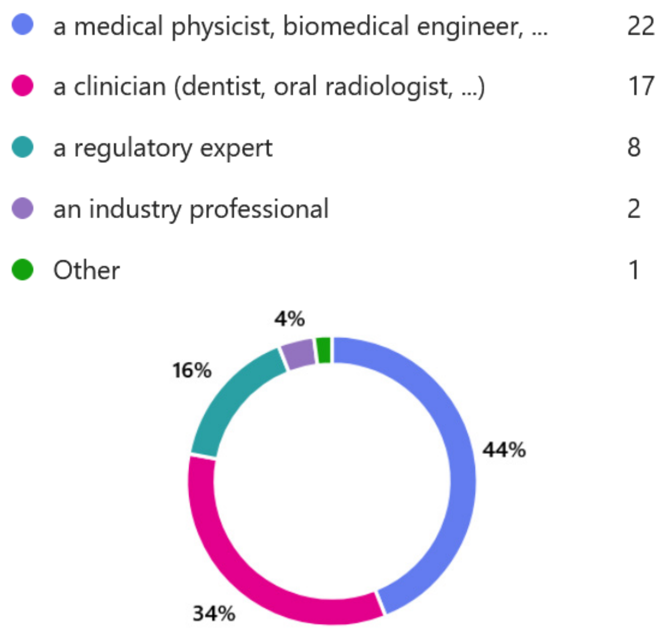


Figure 1. Distribution of professional backgrounds among survey respondents. Note that multiple responses were possible.

diagnostic reference levels, and dosimetry methodology. These areas reflect longstanding challenges in dental imaging, and indicate a need for harmonised approaches across Europe and worldwide.

The survey also highlighted the importance of supporting clinicians through clearer quality assurance protocols, as well as the need for structured training in medical physics and radiation protection for dental professionals. Interest in emerging technologies, i.e., AI-based image enhancement tools and dental magnetic resonance imaging, was present but generally ranked below more traditional topics. This suggests that while innovation is welcome, foundational issues in image quality and dose management remain central to everyday practice.

To translate the survey outcomes into practical work, the SIG established four focus groups that cover and combine the most frequently mentioned themes. These focus groups aim to provide a platform for collaborative work, knowledge exchange, and the development of shared resources across Europe. The survey results show a clear need for coordinated efforts, and they help ensure that the SIG's activities align with the needs and expectations of the wider community.

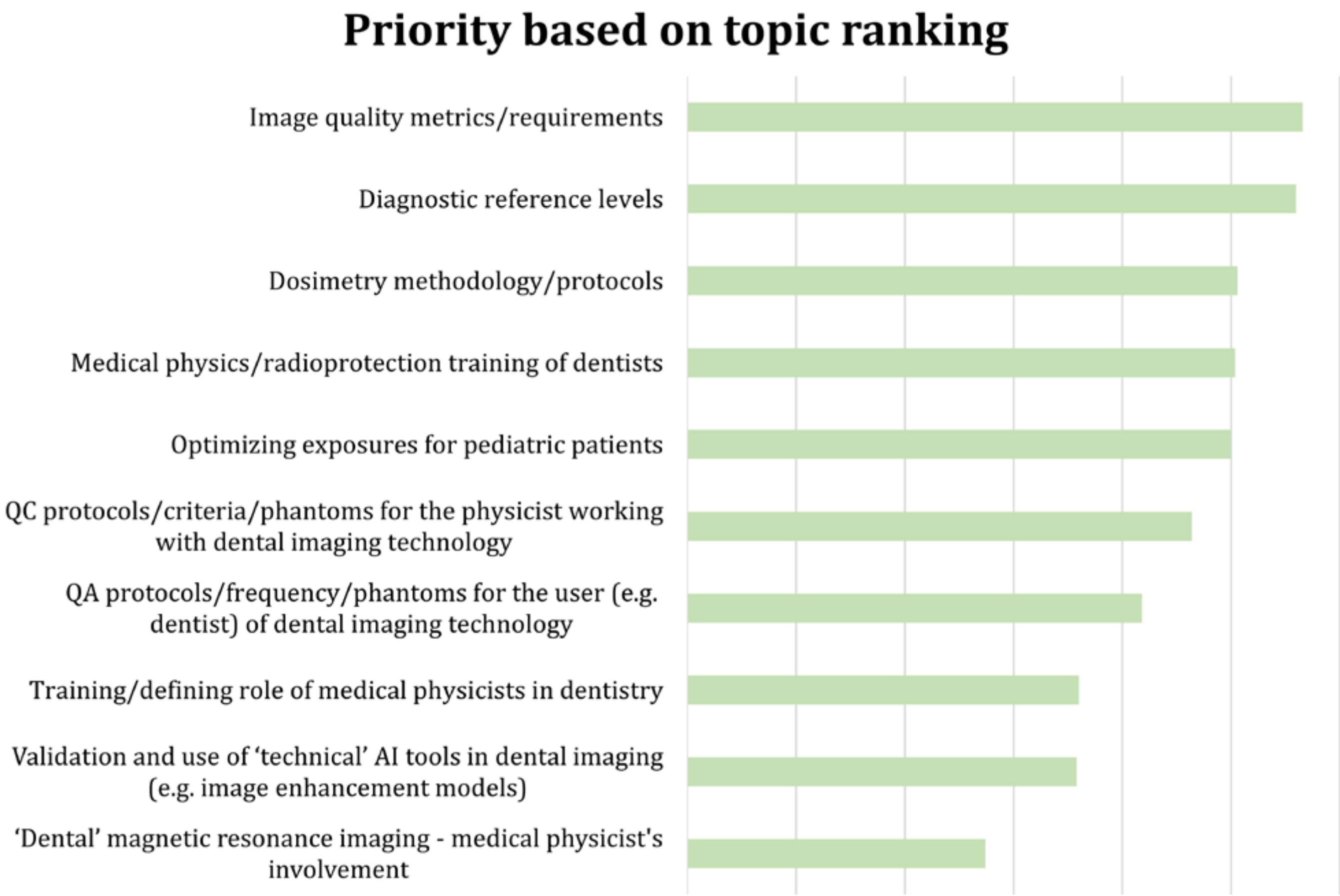


Figure 2. Relative topic priority based on a weighted score of topic ranks.

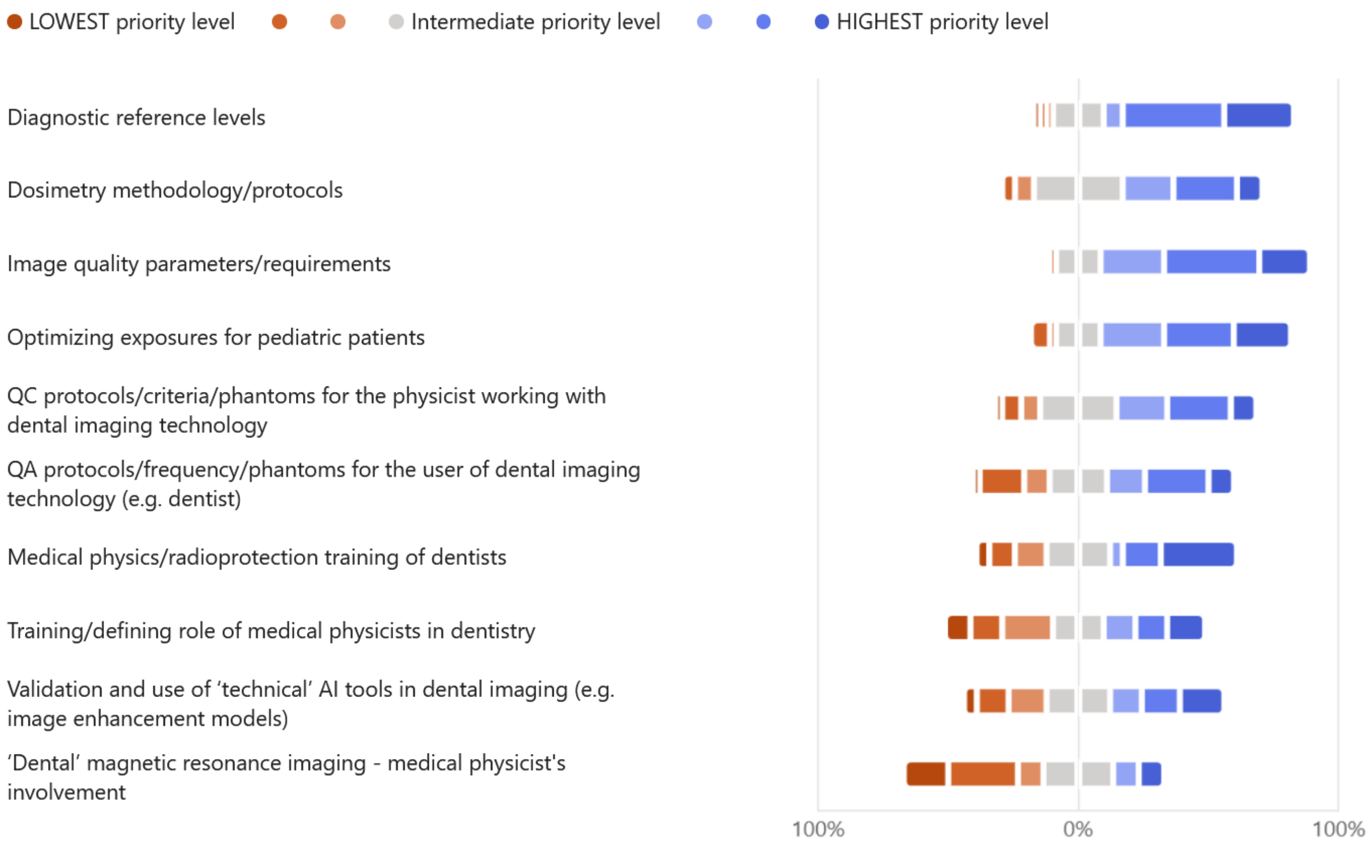


Figure 3. Relative topic priority based on a weighted score of topic ranks.

How to become a SIG_DENTAL_IMAGING member:

SIG_DENTAL_IMAGING is open to professionals interested in dental Imaging. Membership is available to all EFOMP members. Instructions for joining can be found on the SIG_DENTAL_IMAGING page of the EFOMP website: SIG_DENTAL_IMAGING Membership

Ruben Pauwels is an Associate Professor at the Department of Dentistry and Oral Health at Aarhus University, Denmark. His work focuses on dental imaging, radiation protection, and AI-based imaging applications. He contributes to international initiatives on quality assurance, dosimetry, and optimisation.

Closing a Chapter: Reflections on the First Term of EFOMP's Early Career SIG

When a Journey Reaches Maturity

Figure 1. Early Career SIG first steering committee.

Every initiative has its seasons. What began as an idea inspired by growth of creating a liason between youngs around Europe devoted to Medical Physics has now reached a moment of reflection and transition. As Convenor of the EFOMP Early Career Special Interest Group (SIG), I write this article at the closing of our first Steering Committee term — not as an ending, but as a natural evolution of a collective journey shaped by enthusiasm, collaboration, and commitment.

This SIG was never about a single person or a single committee. It has always been about people — early career medical physicists across Europe — and about building a platform where their voices, needs, and aspirations could be heard and supported.

On behalf of the entire Steering Committee, I would like to express my sincere gratitude to EFOMP as an organisation for trusting and supporting this initiative from its very beginning. Special thanks go to both the present and past EFOMP Presidents, as well as to the Officers and parent committees, whose guidance, openness, and encouragement made it possible for this SIG to grow, experiment, and mature. Your support allowed us not only to exist, but to act.

I would also like to deeply thank all the members of the Early Career SIG, and in particular those who served alongside me in the Steering Committee. Your time, ideas, energy, and willingness to go beyond your daily professional commitments are what truly gave life to this group. This term has been shaped by teamwork, diversity of perspectives, and a shared belief that early career professionals deserve visibility, opportunities, and a strong sense of community.

Strengthening Communication and Visibility
One of our main goals was to improve how Early Career medical physicists connect with EFOMP and with each other. Through EFOMP's official social media channels, we actively contributed to spreading relevant information tailored to early careers — from educational opportunities to events and initiatives of interest.

To further simplify communication, we created a dedicated WhatsApp channel, allowing members to stay tuned in an easy, direct, and accessible way. In addition, we opened new collaborative spaces, including giving SIG members the opportunity to participate in a podcast developed in collaboration with other societies from the nuclear sector — an experience that strengthened inter-societal ties and amplified early career voices.

A European Perspective on Education and Training
Education and training across Europe are diverse, rich, and sometimes difficult to navigate. With this in mind, the SIG worked on shedding light on the wide range of programmes available by developing an interactive European map, presented on special tracks within ECMP congresses and now accessible on the EFOMP website. This tool provides key information and contacts, aiming to support mobility, awareness, and informed decision-making among early career professionals.

In parallel, we actively sought to enhance connections between countries during European congresses, encouraging cross-border dialogue and collaboration.

Congresses, Events, and Active Presence
Congress participation has been a cornerstone of the SIG's activities. We are particularly proud of the creation of a dedicated Early Career track, successfully launched for the first time at ECMP in Dublin. This initiative was later implemented in Munich and will once again be present at the upcoming ECMP in Valencia — reinforcing our commitment to ensuring that early career topics have a visible and structured place within major EFOMP events.

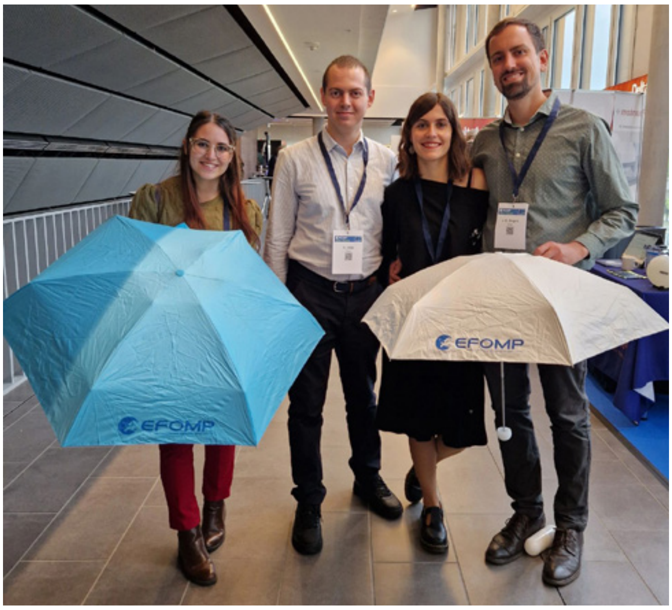


Figure 2. Members of the Early Career SIG steering committee at the ECMP2024

Beyond scientific tracks, Steering Committee members actively supported EFOMP by helping manage booths at international congresses such as EANM, ECR, and ESTRO, strengthening EFOMP's presence and accessibility. Committee members also participated in, and facilitated access for active SIG members to, workshops organised in close collaboration with EFOMP and partner organisations.

Keeping the Community Informed

Communication has been handled with care and intention. We aimed to keep members informed through targeted emails — not too frequent, but focused on key facts, figures, and opportunities. Regular contributions to the quarterly EFOMP Newsletter (EMP News) became another important channel, where we consistently encouraged SIG members to contribute and share their experiences.

We were also honoured to publish reflections on our work and experiences in Physica Medica, marking an important milestone in documenting and sharing the SIG's impact with the wider scientific community.

Scientific Initiatives and Collaborations

From a scientific and professional development perspective, one of our most rewarding achievements has been the completion of our first Enabling, Sponsorship and Mentorship Programme. This pilot experience has now come to an end, delivering very positive outcomes. Results will be shared shortly, and a future call is already in preparation.

Equally important has been the establishment of strong collaborations with Early Career groups from other scientific societies, including AAPM, IRPA, ENS, FUSENET, and ECO. These interactions have enriched our activities and reinforced the idea that Early Career challenges — and opportunities — extend beyond disciplinary and geographical borders.

In addition, numerous webinars were helded and organised by the SIG, in close collaboration with its parent committee. Their success, reflected in strong participation and engagement, confirmed the relevance and need for such initiatives.

Looking Ahead

As this first term of the Steering Committee comes to an end, I would like to sincerely thank every member of the SIG for making all of this possible. What has been achieved is the result of collective effort, trust, and shared vision.

I strongly encourage all Early Career medical physicists to consider applying for the upcoming new call for the Steering Committee, which will open soon. This is your community, your platform, and your future. How it evolves is truly in your hands.

Thank you all for your support, your energy, and your belief in this initiative.

See you in Valencia!

How to Become a SIG_FRID Member

SIG_FREC is open to young Medical Physicist professionals. Membership is available to all EFOMP members. Instructions for joining can be found on the SIG_FREC page of the EFOMP website: SIG_FREC Membership

Leticia Irazola, PhD, is a medical physicist at Centro de Investigaciones Biomédicas de La Rioja, Logroño, Spain. She is also an assistant teacher at Universidad de Valencia for the Medical Physics Master and has been the convener of the Early Career Steering Committee for the past term.

Special Interest Group for Radionuclide Internal Dosimetry (SIG_FRID) report

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

The current membership of SIGFRID stands at 279. We always welcome new applications (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 SIGFRID 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 performed 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 the new EFOMP's e-learning platform, e-LEMENT.
The following dates have been set for our SIGFRID Scientific Meetings and Dosimetry Case Reports in 2026:

Priority 1. Scientific Meetings

1. Tuesday, April 14, 3-5 PM CET
2. Tuesday, June 15, 3-5 PM CEST
3. Tuesday, October 6, 3-5 PM CEST

Dosimetry Case Reports:

1. Tuesday, August 11, 12-1 PM CEST
2. Tuesday, December 8, 12-1 PM CET

We hope to see many of you during these meetings!

Priority 2. Focus Group (FG) management and follow-up.

The updated FGs and their leaders are as follows:
- 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)
- FG9 Reirradiation in MRT (Ann McCann)

Priority 3. Teaching/Education/Dissemination.

In total, 24 pre-recorded webinars on the Basics of clinical Nuclear Medicine dosimetry were released on the EFOMP eLearning platform for individual associate members. All webinars are also already available on our YouTube channel!

Priority 4. Communication.

The SIGFRID members are invited to distribute relevant information directly via the SIGFRID email list or through Slack, such as relevant papers, PhD applications, job openings, and grant opportunities.

EU matters: The RATIONALE (Radionuclide theragnostics for personalised medicine) COST action is still open to new members. This is an excellent opportunity to network with colleagues in theranostic imaging and dosimetry. Short-term visits and student exchanges can be organised. RATIONALE also organises Schools.

Pre-Announcement: EP PerMed Twinning Call to Support the Joint Implementation of Personalised Approaches in Medicine

The European Partnership for Personalised Medicine (EP PerMed) is preparing the launch of its first Twinning Call entitled "Supporting the Joint Implementation of Personalised Approaches in Healthcare."

The aim of this Twinning Call is to accelerate the transfer and implementation of personalised medicine approaches from one country to another through peer-to-peer exchange.

The Twinning process begins with an initial "Early Matchmaking" phase. Both Twinning Providers (institutions or organisations successfully implementing personalised healthcare approaches) and Twinning Receivers (institutions seeking to adopt such approaches in their own healthcare systems) are invited to participate. To facilitate this, EP PerMed has set up a dedicated matchmaking portal.

The call will offer up to €50,000 to support activities that facilitate the exchange of solutions or approaches in personalised medicine and strengthen the capacities and capabilities of one or both participating parties. Twinning partnerships are expected to last between 6 and 12 months.

The submission deadline is expected to be 26 February 2026. Further information can be found in the pre-announcement on the EP PerMed website.

An online matchmaking event will take place on 15 January 2026. Registration for both events is open and available via the link above on the EP PerMed website.

Priority 5. Professional/Regulatory/Economic matters.

The final report of the SimpleRad project (https://earl.eanm.org/simplerad/) is available here.

The survey prepared by Carlo Chiesa and Lidia Strigari regarding the possibilities of administering and reimbursing commercial LUTATHERA more than 4 times received responses from Poland, Czechia, France, Germany, Italy, the Netherlands, Spain, Sweden, Norway, Switzerland, Mexico, and the USA.

We kindly ask SIGFRID members in other countries to forward the quick survey to a regulatory officer, a pharmacist, or a nuclear medicine specialist. Medical physicists may also reply, but they are not the main target of this survey. The survey is reachable here.

The date for the EMA multi-stakeholder workshop on the clinical evaluation of therapeutic radiopharmaceuticals in oncology has not been announced yet.

This workshop will complement the public consultation on the EMA concept paper on clinical evaluation of therapeutic radiopharmaceuticals in oncology (EMA/CHMP/451705/2024).

2Symposium on Molecular Radiotherapy Dosimetry: The future of theragnostics (SMRD2):

The abstract book and invited talk slides are available here. In addition a special issue of Physica Medica with the best contributions to the meeting is in preparation.

Incoming meetings:

- Radboud Summer School 'Basic Dosimetry & Radiobiology for Radionuclide Therapy'. June 22-26. Nijmegen. The Netherlands. Registration is now open!

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

- 41st EANM Annual Congress. October 17-21, 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 serves as the Vice-Chair of the Steering Committee of SIGFRID.

3D Printing of a Phantom for an End-to-End Test of SRT and Prostatic SBRT Treatments

Following a previous work [1], we decided to extend the validity of clinically deliverable fields in order to pursue the possibility to treat SRS and prostate SBRT patients in our hospital.

For that, we decided to print a hybrid phantom that could accommodate two detectors (gafchromic film and a microdiamond-PTW 60019) for an end-to-end test of these kinds of treatments.

To print the phantom, we used available printers in the physics department of University of Liege (Original Prusa i3 MK3 and Original Prusa XL) and PLA polymer. During the project phase, we segmented the phantom to resemble a head and pelvic shape: we opted for a simple cylindrical design with the possibility to add one or two half-sphere to simulate either a head or a pelvis, respectively for SRS and SBRT treatments (figure 1).

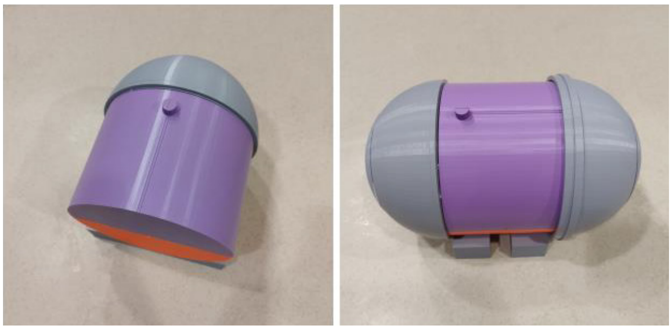


Figure 1. Printed phantom in "head modality" (left figure) and "pelvic modality" (right figure).

We also add a "nose" (see figure 1), to break the rotational symmetry (to test the roll rotation) and some surface marks to allow laser positioning. We designed pieces to fit in each other to obtain a watertight structure. We also print two inserts, that can be placed at the center of the cylinder, for microdiamond detector or radiochromic film, respectively the orange and the grey inserts in figure 2.

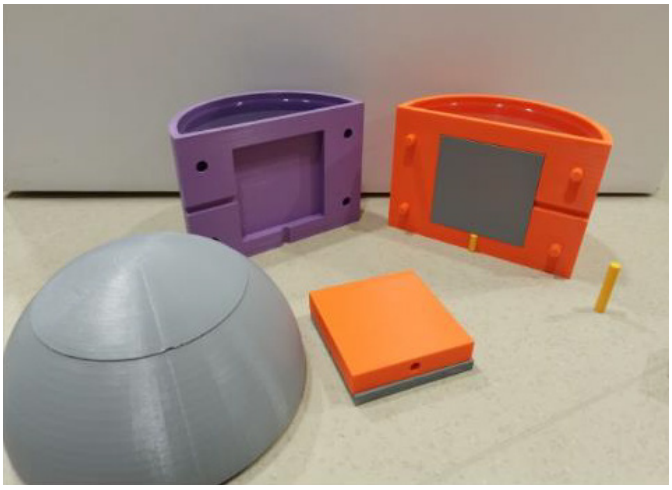


Figure 2. inserts of phantom: orange for microdiamond detector and grey for gafchromic film.

Due to technical constraints, we printed a hollow structure, to be filled with water, with an infill of 80%.

We replanned 10 SRS patients on a CT scan of our phantom (4 or 5 non-coplanar arcs per plan, field dimensions of the order of 1cm x 1cm) and 10 prostate SBRT plans (2 full arcs per plan, field dimensions of the order of 10cm x 10cm). Calculations were performed with Eclipse TPS, Acuros XB algorithm v.18.

We measured plans in our True Beam Linac, equipped with Millennium MLC and Identify system for SGRT. To perform dose measurements with microdiamond, we established a calibration factor with our reference Farmer chamber (PTW 30010). To account for different orientations of the beam in respect to microdiamond's active volume, resulting in a variable response [2], we evaluated a mean factor with different orientations.

For SRS plans, we also used a correction factor evaluated from TRS–483 [3], on the basis of a "mean effective" irradiated field. With a home–made script, we evaluate the total open surface of each field (pondered with a monitor unit of each control point) and we take the mean of field surfaces for each plan, to evaluate the correction factor. Finally, we used the EBT-XD gafchromic film, adapted to the dose range of plans.

The comparison of the couch position corrections, between a CBCT and the SGRT system gives the results of table 1: we note that both systems are in an excellent agreement, well under Varian tolerances of 0.2mm / 0.2°.

Shift	Mean ± St. Dev. (k=2)	Range
ΔVRT (mm)	0.03 ± 0.09	[0, 0.1]
ΔLNG (mm)	0.08 ± 0.12	[0, 0.2]
ΔLAT (mm)	0.05 ± 0.1	[0, 0.1]
ΔROT (°)	0.01 ± 0.06	[0, 0.1]
ΔRoll (°)	0.14 ± 0.26	[0, 0.4]

Table 1. Mean differences of position of phantom between a CBCT and IGRT system.

In table 2, we present differences between microdiamond measurements and TPS calculations for both SRS and SBRT prostate plans.

Treatment	Mean	Range
SRS	+3.2%	[+1.0% ,+7.3%]
SBRT	-0.5%	[-1.6%, +1.2%]

Table 2. Mean differences between microdiamond measured dose and TPS calculations.

In table 3, we report the proportion of plans for which the gamma analysis between measured dose distribution with radiochromic films and TPS calculation presents a passing rate superior to 95% (with different combinations of dose difference and DTA, threshold 10%).

Treatment/ Detector	5%, 2 mm	5%, 1 mm	3%, 2 mm	3%, 1 mm
SRS	80%	50%	80%	10%
SBRT	100%	100%	100%	67%

Table 3. Percentage of plans with a gamma passing rate >95% for different combinations of dose difference and DTA, with a threshold of 10%.

In general, we note similar corrections with CBCT and SGRT, confirming the result of previous works [1].

We also observe good agreement between calculated and measured dose with microdiamond: a mean difference of 3.2% for SRS treatment (the maximum difference of 7.3% can be explained with the smallness of the fields and high dose gradients of the plan) and with values well less than 2% in every case for SBRT plans.

Film analysis reinforces the observation that all plans are correctly delivered by the LINAC. A 1 mm tolerance seems too strict for SRT plans analysis. Let us note that plans that failed the analysis with 2 mm DTA criterion had a dramatically low passing rate, result that can be explained with a manipulation error rather than a delivery problem, as other plans presented great passing rates.

References

[1] Pellegri L., Jarbinet V., Deshayes V. Setting up of an end-to-end test for SRT treatments. Physica Medica 115, 2023. DOI: 10.1016/j.ejmp.2023.102993.

[2] Maddison Shaw et al. Characterisation of a synthetic diamond detector for end-to-end dosimetry in stereotactic body radiotherapy and radiosurgery. Physics and Imaging in Radiation Oncology 20, 2021. doi : 10.1016/j.phro.2021.10.002.

[3] TRS – 483 Dosimetry of small static fields used in external beam radiotherapy, IAEA, Vienna, 2017.

Mercanti Nicolas is a medical physics intern at Grand Hôpital de Charleroi (Charleroi, Belgium) and previously at CHU Tivoli (La Louvière, Belgium) where this work was carried out in the context of a master thesis at Université de Liège.

RIT *Complete* FROM RIT®

THE INDEPENDENT, COMPREHENSIVE QA SOFTWARE SOLUTION BUILT FOR MEDICAL PHYSICISTS

RIT *Complete* software consolidates all of RIT's innovative therapy products into one comprehensive QA solution, providing powerful analysis routines in a user-friendly interface to maximize the efficiency and precision of your measurements.

MACHINE QA

RIT *Complete* provides extensive machine QA capabilities with a full suite of measurements in accordance with TG-142, TG-148, and TG-135 recommendations. Confidently perform daily, monthly, and annual QA knowing your delivery performance is optimized.

PATIENT QA

RIT was the first to develop software for IMRT analysis and continues lead the industry with automated patient QA routines. RIT *Complete* enables clinical physicists to analyze advanced treatment deliveries rapidly, ensuring total measurement precision without sacrificing speed.

IMAGING QA

Perform Imaging QA with a full suite of one-click, instant phantom analyses of therapeutic images. The software comes equipped with tracking, trending, tolerance customization, and hands-free automation tools designed to streamline your workflow.

MLC QA

RIT *Complete* maximizes the precision of quality assurance for multi-leaf collimators on any linear accelerator, including Varian LINACs, Elekta LINACs, CyberKnife® M6 MLC, Radixact®, and more. Track MLC performance over time with assurance that patient treatments are proceeding as planned.

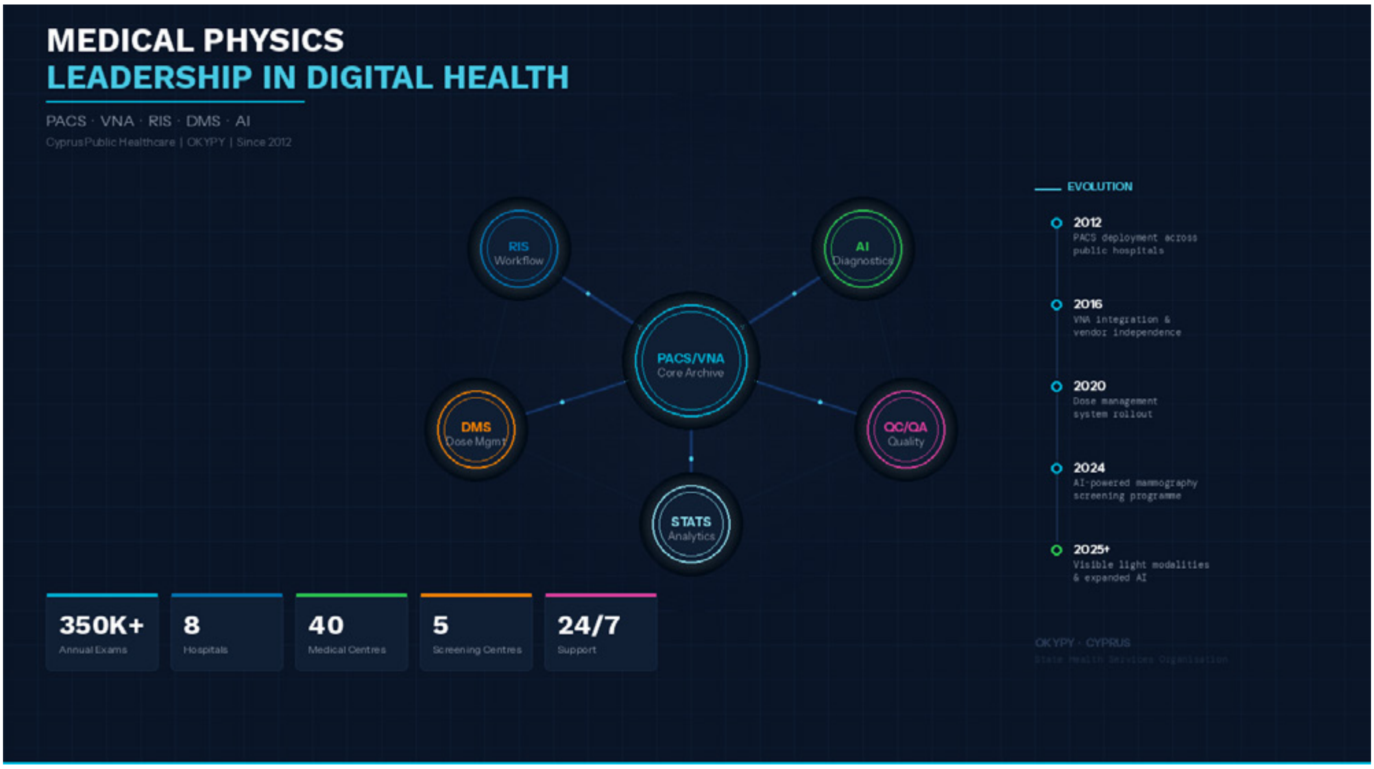
Click to request a demonstration of all the advanced features in the RIT *Complete* software package.

+1 (719) 590-1077, OPT. 4 SALES@RADIMAGE.COM

RADIOLOGICAL IMAGING TECHNOLOGY, INC. IS A MULTI-GENERATIONAL FAMILY-OWNED COMPANY

Medical Physics Leadership in Digital Health:

PACS, Dose Management and AI Integration in Cyprus Public Healthcare



Introduction

The role of the medical physicist has evolved far beyond radiation dosimetry and quality assurance. In an era defined by digital transformation, medical physicists are uniquely positioned to lead the design, deployment, and governance of enterprise-level health informatics systems. Their deep understanding of imaging physics, radiation safety, data standards, and clinical workflows makes them natural architects of the digital infrastructure that modern healthcare demands.

In Cyprus, this expanded leadership role has been demonstrated in practice. Since 2012, the Medical Physics PACS Service of the State Health Services Organisation (OKYPY) has built and operated the national medical imaging infrastructure for all public hospitals — a system that today handles approximately 350,000 examinations annually and maintains a massive longitudinal digital archive enabling patient examination comparisons across years.

From Film to a National Digital Ecosystem

What began as a departmental PACS deployment has evolved into a comprehensive national ecosystem encompassing PACS, Vendor Neutral Archive (VNA), Radiology Information System (RIS), and Dose Management Software (DMS). The decision to adopt VNA technology early on proved strategically critical: it ensured vendor independence, allowed seamless integration of equipment from multiple manufacturers, and future-proofed the investment against rapid technological change.

The infrastructure is centrally managed from OKYPY's facilities, with a primary data centre and a geographically separated disaster recovery site implementing a 3-2-1 backup strategy. A dedicated team of seven specialists provides 24/7 support, maintaining system uptime across every public hospital in the country. High-resolution diagnostic displays are calibrated and quality-controlled according to DICOM GSDF standards, with web-based DICOM viewers enabling secure access from any authorised device.

Expanding Into Population Screening

The proven reliability of this infrastructure led to a landmark cooperation with the Ministry of Health to support the national Breast Cancer Screening Programme. Under a five-year agreement, OKYPY is deploying the full PACS/VNA/RIS/DMS stack across five mammography centres — in Aglantzia, Linopetra, Mackenzie, Famagusta and Geroskipou— with Aglantzia serving as the central hub. The system supports all mammographic protocols including 2D, tomosynthesis, high-definition tomosynthesis, and combo modes.

This is not merely an IT project. Medical physicists are directly responsible for quality control of the five digital mammography systems, patient dose optimisation, and the establishment of diagnostic reference levels specific to the Cypriot population. These complementary services are provided by the Medical Physicists of the Organisation, creating an integrated quality framework that is uniquely positioned under medical physics governance.

Artificial Intelligence as a Clinical Tool

Perhaps the most forward-looking dimension of this programme is the integration of artificial intelligence into the diagnostic workflow. OKYPY manages the full AI procurement lifecycle — from evaluation and acquisition of CE-marked algorithms to hardware provision, PACS integration, and ongoing support. The AI system analyses incoming mammograms in parallel with the standard clinical workflow, assigning a malignancy probability score (1–100) and automatically highlighting regions of interest for the radiologist.

What makes this implementation distinctive is the medical physics-led approach to validation and optimisation. Before full deployment, AI tools are evaluated against historical datasets. Performance metrics — sensitivity, specificity, and threshold calibration — are systematically monitored and adjusted for different clinical scenarios: asymptomatic women in screening, symptomatic patients, women with a history of breast cancer, and varying breast density categories. This continuous quality assurance cycle is a natural extension of the medical physicist's core competency.

Dose Management and Patient Safety

The integration of a dedicated Dose Management System across the entire imaging network represents a significant advancement in radiation protection. The DMS automatically captures and tracks patient radiation doses from every modality, enabling real-time analysis, protocol optimisation, and benchmarking across centres. Combined with the statistical analytics platform developed by OKYPY, this creates a powerful decision-support tool that translates raw dose data into actionable clinical intelligence — identifying outliers, establishing facility-specific DRLs, and driving continuous improvement and establishment of advanced protocols in imaging practice.

Beyond Ionising Radiation: Visible Light Modalities

The scope of OKYPY's medical physics PACS services extends beyond traditional ionising radiation imaging. The platform now supports visible light modalities including endoscopy videos and images and wound photography, archiving and distributing these data through the same standardised infrastructure. This expansion reflects the broader trajectory of the profession: medical physicists are increasingly stewards of all medical imaging data, not only radiation-based modalities.

A Replicable Model for Small Nations

The Cyprus experience offers a replicable model for countries of similar scale. By anchoring digital health infrastructure within the medical physics profession rather than delegating it to commercial IT vendors, OKYPY has achieved three strategic advantages: clinical ownership of imaging quality from acquisition to archival, substantial cost efficiencies through shared infrastructure and in-house expertise, and the agility to adopt emerging technologies — such as AI — within a framework of rigorous scientific evaluation.

Each year brings measurable advancement: new modalities integrated, additional centres connected, AI capabilities expanded, and dose optimisation protocols refined. This trajectory of continuous improvement, driven by medical physics leadership, demonstrates that the profession's contribution to healthcare extends well beyond the physics laboratory — it is, increasingly, at the strategic heart of digital health.

Demetris Kaolis is Coordinator of Medical Physics PACS Services at the State Health Services Organisation (OKYπY) in Cyprus. Since 2012, he has led the design and deployment of the national medical imaging infrastructure for all public hospitals and medical centres across Cyprus, and currently oversees the PACS/VNA/RIS/DMS and AI integration for the Ministry of Health's population-based breast cancer screening programme.

A Lasting Legacy: Mihai Teodor Dumitrache — Architect of Modern Medical Physics in Romania

The evolution of radiotherapy in Romania over the last two decades cannot be told without acknowledging the decisive role played by medical physicists who shaped its modernisation, ensured its safety, and aligned it with international standards. Among them, Mihai Teodor Dumitrache stands out as a central figure — not only as a highly skilled medical physics expert, but as a visionary, educator, leader, and bridge between clinical practice, national policy, and international cooperation.

Trained initially as an engineer and later earning a master's degree in medical physics and a PhD in Physics, with a focus on dosimetry in 3D radiotherapy, Mihai Dumitrache built his career at the intersection of technology, clinical application, and radiation protection. From early in his professional life, he demonstrated an exceptional ability to translate complex physical principles into practical, clinically meaningful solutions. His work in commissioning linear accelerators, treatment planning systems, and quality assurance protocols helped ensure that Romanian radiotherapy centers transitioned safely from cobalt-based treatments to modern LINAC-based techniques such as 3D conformal radiotherapy, IMRT, VMAT, and later stereotactic approaches.

At the “Dr. Carol Davila” Central Military Emergency University Hospital (SUUMC) in Bucharest, where he has served as an active Romanian army officer-medical physics expert, head of the medical physics team since 2015, Mihai played a pivotal role in transforming the Radiotherapy Department into one of the most advanced public centers in the country. He was deeply involved in the planning, shielding calculations, commissioning, and clinical implementation of new radiotherapy equipment, including LINACs and HDR brachytherapy systems. Under his technical leadership, SUUMC became among the first public institutions in Romania to implement IMRT and later expand into modern brachytherapy, intraoperative radiotherapy (IORT), and a brand new extended radiotherapy facility project. His work ensured that technological progress was always accompanied by rigorous quality assurance and radiation protection, safeguarding both patients and staff.

Beyond his hospital responsibilities, Mihai's influence extended far beyond a single institution. Since 2015, he has been a permanent member of the Technical Working Group of the Romanian Ministry of Health for World Bank-funded radiotherapy modernization projects. In this capacity, he contributed to the national strategy for upgrading radiotherapy infrastructure, drafting technical specifications for international tenders, evaluating equipment proposals, and supporting the implementation of new technologies across multiple centers. His collaboration with the International Atomic Energy Agency (IAEA) was particularly significant, as he helped design and implement technical cooperation projects aimed at improving radiotherapy quality and safety nationwide. The Ministry of Health formally recognised his professionalism, dedication, and leadership in a 2019 letter of recommendation, describing him as a trusted expert whose technical expertise was instrumental in guiding national radiotherapy reforms.

One of Mihai's most impactful contributions to medical physics in Romania was his leadership in promoting and implementing end-to-end (E2E) dosimetry audits based on IAEA methodology. Through a voluntary national pilot project initiated at SUUMC, he and his team coordinated on-site audits using anthropomorphic phantoms across more than 30 beams in multiple public and private radiotherapy centres. This initiative significantly strengthened the culture of dosimetric accuracy, inter-institutional learning, and quality assurance in Romanian radiotherapy. The results of this work were later presented at the ESTRO Congress in 2024, demonstrating Romania's growing presence in international medical physics research and practice.

Equally important was his commitment to education and capacity building. As a university lecturer at the University of Bucharest since 2022, Mihai has been directly involved in training the next generation of medical physicists. Together with his colleagues, he helped develop practical laboratory-based education in radiotherapy treatment planning and dosimetry, including through a dedicated planning laboratory established in collaboration with the IAEA and the Ministry of Health. His teaching, mentorship, and involvement in international ESTRO and IAEA courses have helped elevate the standard of medical physics education in Romania, ensuring that young professionals are prepared for modern, technology-driven radiotherapy.

Throughout his career, Mihai Dumitrache has remained deeply engaged in scientific activity, contributing to peer-reviewed publications in dosimetry, IMRT, VMAT, brachytherapy, and radiobiological modeling. His research reflects a consistent focus on clinical relevance, accuracy, and patient safety — core principles that have guided his entire professional trajectory.

More than a scientist or technician, Mihai has been a builder of systems, relationships, and communities. He worked tirelessly to connect Romanian radiotherapy centers with international bodies such as ESTRO and the IAEA, fostering collaboration, knowledge exchange, and continuous improvement. His professionalism, integrity, and dedication earned him the respect of clinicians, physicists, policymakers, and international experts alike.

Today, as Romanian radiotherapy moves toward adaptive treatments, MR-guided radiotherapy, AI-supported planning, and expanded brachytherapy applications, the foundations laid by Mihai Dumitrache remain clearly visible. His contributions have not only modernised technology but also shaped a culture of safety, quality, and excellence in medical physics across the country.

In recognising Mihai Dumitrache, we recognise more than an individual — we recognise one of the principal architects of modern radiotherapy and medical physics in Romania. Through his teaching, mentorship, and professional leadership, he shaped and guided generations of medical physicists. His influence extended far beyond his own institution, impacting radiotherapy services and medical physics practice across the entire country.

Although his passing is a profound loss for our community, his legacy will continue to guide and inspire the field for years to come.

Diana-Cristina Pop is a Medical Physics Expert in Radiotherapy at the Institute of Oncology “Prof. Dr. Ion Chiricuță” in Cluj-Napoca, Romania, and the acting President of the Romanian Society of Medical Physicists (SRFM). She has extensive clinical and research experience in brachytherapy, with a particular focus on image-guided and adaptive techniques, quality assurance, and dosimetry for gynecological cancer treatment. She is actively involved in national and international professional societies, contributing to education, training, and the advancement of medical physics practice in Romania. Her work includes clinical implementation projects, research collaborations, and participation in national and international professional working groups aimed at improving radiotherapy standards and patient safety.

Working as an MPE in Finland

Interview series on the path to MPE and work in different countries

GENERAL INFO

Number of MPE in country: ~200 (not all are members of the national member organisation)
Number of Members in NMO: 165 (those who are qualified as medical physicists) + 30 (resident medical physicists)
Name of National Member Organisation (NMO): Sairaalafyysikot ry - Finnish Association of Medical Physicists (FAMP)
Link to website
"Medical Physicist" in the national language: Sairaalafyysikko

BECOMING MPE

What are the entry requirements to become a trainee for MPE status?
Minimum of MSc (or MSc (Tech.)) in relevant fields, such as physics, medical physics, technical physics, biophysics or biomedical engineering. By the end of the MPE studies, the student has to pass at least an examination for a Licentiate in Philosophy (Phil.Lic.), or attain a doctoral-level degree.

How would a student proceed to find training positions in Austria?
By contacting chief physicist(s) and applying for open residency positions.

Can you describe the training period?
Minimum of seven months of training in nuclear medicine, radiation therapy, and diagnostic radiology. The same length of training period is recommended for clinical neurophysiology as well. A minimum of two years of training has to happen in a university hospital.

Duration of practical experience required before obtaining MPE status:
5 years

Is there an additional exam to become an MPE?
Yes. The aim of the examination is to test the ability of the students to apply theoretical knowledge to clinical practice. The permission to take part in the exam has to be requested from the Education Committee for Medical Physicists. The examination contains questions from all genres of training period, namely nuclear medicine, radiation therapy, diagnostic radiology, and clinical neurophysiology/clinical physiology. In future, the mandatory anatomy and physiology related question can be taken as a separate multiple-choice examination prior to the final examination.

WORK AS MPE

In which fields do MPE work and in which proportions?
39% of the MPEs work in radiation therapy, 23% of MPEs work in radiology, and 25% work in nuclear medicine and clinical physiology, and 14% work in clinical neurophysiology. These statistics are from a few years ago.

What is required in terms of continuous professional development while working as an MPE?

A certain number of CPD credits per year, and 200 CPD credits during a running 5-year interval. CPD credits need to be collected throughout the career.

Which role does research play for MPE in Finland?

Generally, research is allowed and even encouraged as part of job description. Of course, there is a lot of regional variation in Finland concerning this topic.

INTERNATIONAL MOBILITY

Which language skills are required for MPE work?

In practice, one needs to know Finnish or Swedish (Swedish is an official language in Finland) to be able to work as an MPE in Finland.

Matti Hanni is chairperson of the Finnish Association of Medical Physicists (FAMP) and works at Oulu University Hospital in the Department of Radiology as Deputy Chief Physicist. He is responsible for X-ray imaging and angiography/ fluoroscopy studies. He holds a PhD in physics and docentship in medical physics, both from University of Oulu.

Jari Rautiainen is secretary of the Finnish Association of Medical Physicists (FAMP). He works as medical physicist in Lapland Central Hospital, Rovaniemi, Finland, at the Department of Radiology and Nuclear Medicine.

Towards Quantitative ^{177}Lu SPECT/CT for Clinical Dosimetry

Clinical motivation and background

The increasing clinical use of ^{177}Lu-based radiopharmaceutical therapies has reinforced the need for accurate and reproducible quantitative imaging. Patient-specific dosimetry requires accurate activity quantification, which depends on reconstruction parameters, calibration factors and gamma camera performance at therapeutic activity levels. Although quantitative SPECT/CT is increasingly available in routine practice, uncertainties remain regarding reconstruction optimisation and the potential impact of deadtime effects, particularly during early post-therapy imaging.

This work was motivated by the introduction of ^{177}Lu-PSMA therapy at our centre. Figure 1 illustrates whole-body planar scintigraphies acquired at three time points after radiopharmaceutical administration. The images show clearly the temporal evolution of tracer distribution and clearance. While planar imaging provides valuable qualitative information, it also highlights the limitations of visual assessment alone and underscores the need for robust quantitative SPECT/CT to support personalised dosimetry and clinical decision-making.

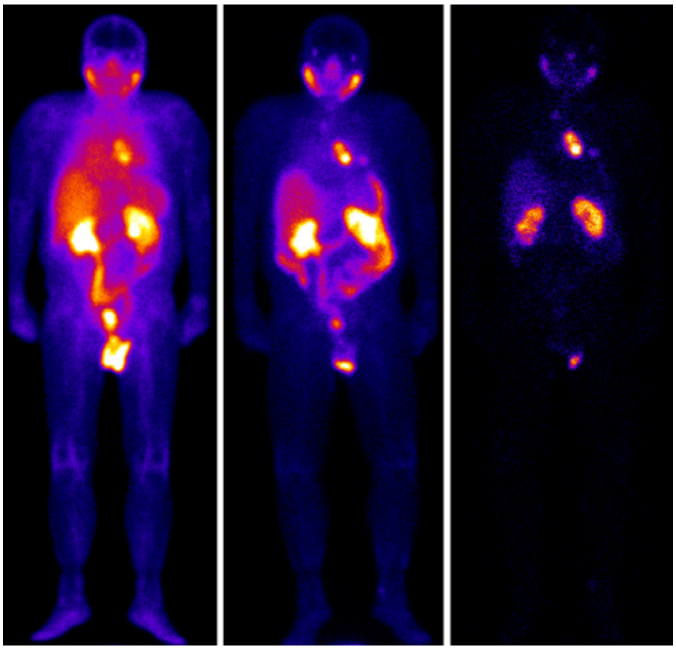


Figure 1. Whole-body planar scintigraphy performed during the first cycle of ^{177}Lu-PSMA therapy, illustrating temporal changes in tracer distribution on the day of administration, administration, 24, and 144 hours post-treatment.

Phantom study and acquisition protocol

Based on this clinical context, a phantom-based study was performed to optimise quantitative ^{177}Lu SPECT/CT, assess the potential impact of deadtime during early post-therapy acquisitions and evaluate calibration stability. A NEMA IEC body phantom was filled with 7.9 GBq of ^{177}Lu, using a sphere-to-background activity concentration ratio of approximately 10:1 [1]. Ten sequential SPECT/CT acquisitions were performed as the activity decayed, covering a wide activity range representative of clinical post-therapy imaging.
All acquisitions were performed on a Siemens Symbia Intevo 6 SPECT/CT system, using a 208 keV photopeak with a ±10% energy window. Images were reconstructed using ordered-subset expectation maximisation (OSEM) with Hybrid ReconTM. The number of subsets was fixed at four, while the number of iterations varied between 8 and 32.

Quantitative performance assessment

Quantitative performance was assessed using contrast recovery coefficients (CRC), activity recovery coefficients (ARC), coefficients of variation

(CV) and contrast-to-noise ratio (CNR). CRC and ARC evaluated contrast and activity recovery within the phantom spheres relative to known reference values, characterising partial volume effects (PVE) and quantitative accuracy. Image noise was quantified using the CV in the background region, while lesion detectability was assessed using CNR according to the Rose criterion.

Reconstruction parameters strongly influenced quantitative performance. Increasing OSEM iterations improved CRC and ARC across all sphere sizes, reflecting enhanced contrast recovery and activity accuracy, but increased image noise. An optimal balance between contrast recovery, noise and quantitative reliability was achieved using 24 iterations and 4 subsets. Under these conditions, high and consistent CRC and ARC values were obtained (Figure 2), while background noise remained limited (CV≈5%). All spheres satisfied the Rose criterion, confirming adequate detectability.

Deadtime evaluation and calibration stability
The potential impact of deadtime at high activity levels was evaluated by analysing the relationship between measured total count rate and true activity [2]. A strong linear relationship was observed up to approximately 8 GBq (Figure 3A), with no evidence of saturation or non-linear behaviour, indicating negligible deadtime within the investigated activity range.

Calibration stability was assessed by analysing the calibration factor (CF) as a function of the activity at the time of acquisition. The CF remained stable at (18.3 ± 0.3) cps/MBq across the entire activity range (Figure 3B) and for all reconstruction settings, demonstrating preserved quantitative accuracy even for early post-therapy imaging.

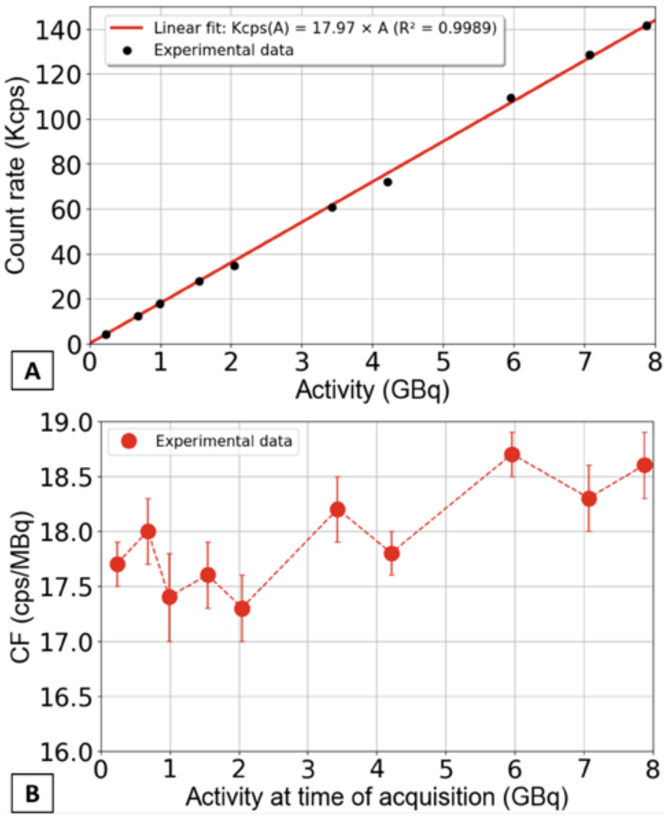


Figure 3. A - Count rate versus activity, showing linearity up to 8 GBq. B - CF versus activity, demonstrating stability across the range.

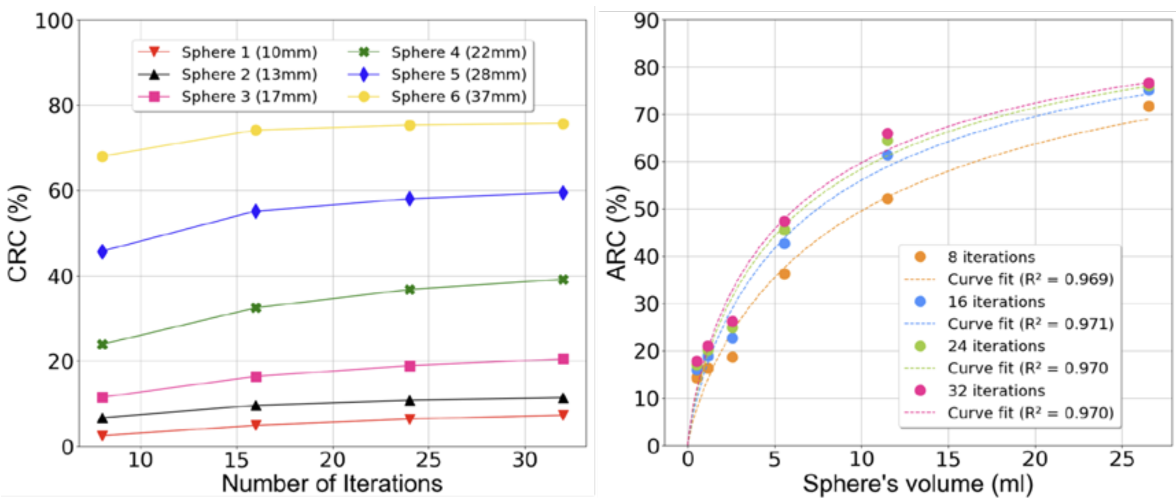


Figure 2. CRC (left) and ARC (right) for phantom spheres, showing improved recovery with increasing iterations and sphere size.

Conclusion

This study demonstrates that accurate and robust quantitative ^{177}Lu SPECT/CT imaging can be achieved using standard clinical systems, despite the inherent challenges associated with quantitative imaging (e.g. partial volume effects, dead time, and image noise), and without significant dead-time limitations, even at high activity levels shortly after therapy administration. By combining clinical motivation with systematic physics-based optimisation, this work highlights the key role of the medical physicist in enabling reliable patient-specific dosimetry and supporting personalised radionuclide therapy.

References:

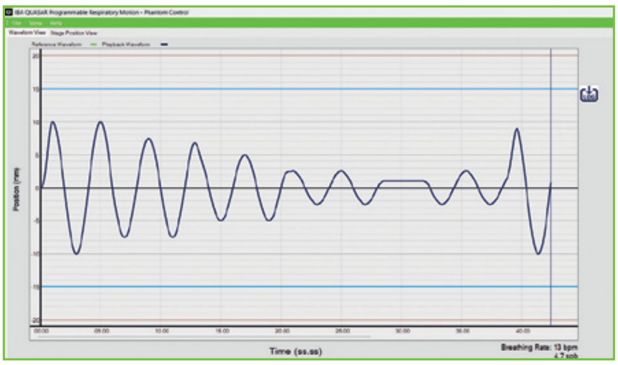
[1] Danieli R, et al. Quantitative 177Lu SPECT/CT imaging for personalized dosimetry using a ring-shaped CZT-based camera. EJNMMI Phys. 2023;10(1):64. doi:10.1186/s40658-023-00586-z.

[2] Stella M, et al. Gamma camera characterization at high holmium-166 activity in liver radioembolization. EJNMMI Phys. 2021;8(1):22. doi: 10.1186/s40658-021-00372-9.

Rita Albergueiro is a Medical Physics resident specializing 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.

QUASAR™ pRESP 2.0
Respiratory Motion Phantom

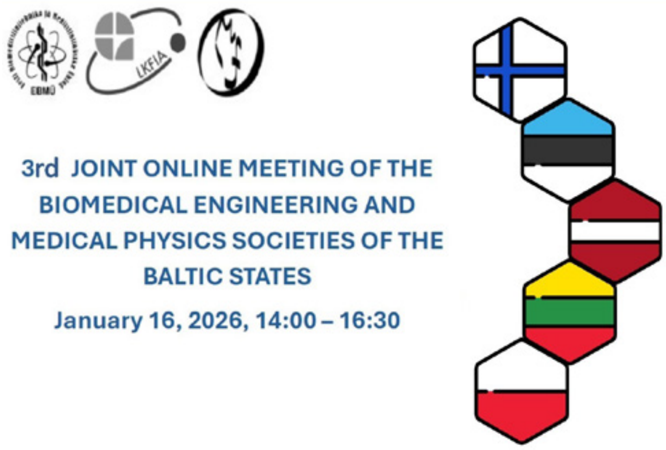
Designed to support clinical teams with end-to-end motion management QA. Lightweight and easy to deploy, it delivers reproducible respiratory and tumor motion simulation to help verify imaging and treatment accuracy with ease and consistency. Featuring a modular design, the phantom can be used in both static and motion modes, supporting a wide range of clinical QA scenarios.



- Simulate respiratory motion
- Verify SGRT and IGRT workflows
- Ensure accuracy in Gating, Motion Tracking & DIBH techniques

Scan for product details and brochure

Key Outcomes of the 3rd Joint Online Meeting of the Baltic Biomedical Engineering and Medical Physics Societies



The 3rd Joint Online Meeting of the Biomedical Engineering and Medical Physics Societies of the Baltic States, together with representatives from Poland and Finland, was held on January 16, 2026, with approximately 60 participants in attendance. This meeting followed two earlier joint online meetings that laid the foundation for regional cooperation. The 1st Joint Online Meeting took place on September 21, 2023, and gathered around 50 participants from the Baltic States. Discussions at that time focused primarily on the current national situations and explored possibilities for future collaboration. The 2nd Joint Online Meeting was held on December 13, 2024, also with approximately 50 participants, and continued the dialogue on professional development, cooperation, and harmonisation of practices across the region.

During the 3rd meeting experts and professionals from Lithuania, Latvia, Estonia, Finland, and Poland came together to exchange views on recent developments, achievements, and challenges in biomedical engineering and medical physics. The meeting served as an important platform for sharing clinical experience and professional knowledge, while also fostering discussions on structural and legislative aspects related to the professional status and recognition of medical physicists in the participating countries.

The Estonian session began with an overview of the current situation in medical physics in Estonia presented by Joosep Kepler, followed by an update on the Medical Technology and Medical Physics MSc programme and the current educational landscape by Sergei Nazarenko. He also introduced the SAMIRA Joint Action programme. Eduard Gerškevits presented information on the IAEA Anchor Center (The Rays of Hope Anchor Center in Tallinn). The session concluded with an announcement and overview of the EFOMP School to be held in Tallinn on 23–25 April 2026, focusing on advancing breast imaging with AI, presented by Joosep Kepler.

From Latvia, key topics were presented, starting with an overview of the current situation in medical physics in Latvia by Mārtiņš Pikšis, he also introduced the new Latvian Association of Clinical Medical Physicists and Engineers society, followed by a presentation on high-dose CT examinations by Katrīna Caikovska. The session continued with an overview of recent developments and updates in nuclear medicine in Latvia, presented by Vineta Vanaga and Laura Lulle, and concluded with a presentation by Kristaps Palskis on a new research area, highlighting the University of Latvia experiment with ^{47}Sc conducted in collaboration with CERN.

A wide range of topical topics were presented from Lithuania, starting with Kirill Skovorodko overview of the current situation of medical physics in Lithuania, followed by Jurgita Laurikaitienė sharing of recent and ongoing EFOMP activities. Birutė Gricienė highlighted the role and visibility of medical physicists at the 2026 Baltic Radiology Congress. Antonio Jreije provided insights into the latest updates and engagement opportunities for Inside EFOMP EMP News. The session also included an overview of the joint Baltic Medical Physics Societies seminar on ultrasound presented by and a summary of the highlights of the 17th International Conference on Medical Physics in the Baltic States 2025.

During the 3rd meeting, the current situation of medical physics in Poland was presented by Witold Skrzyński. His presentation outlined the role and activities of the Polish Society of Medical Physics, described the professional status of Medical Physicists (MP) and Medical Physics Experts (MPE) in Poland, and introduced the Polish Journal of Medical Physics and Engineering. Particular emphasis was placed on the promotion of the journal and on opportunities for international cooperation in scientific publishing and professional exchange.

The situation in Finland was presented by EFOMP delegate Tommi Noponen, who provided an overview of the development of medical physics in Finland. His presentation covered the history and structure of the Finnish registration scheme, the education and training pathway for medical physicists, and the activities of the Finnish Association of Medical Physicists. The Finnish experience offered valuable insights into professional regulation and quality assurance in medical physics practice.

Overall, the 3rd Joint Online Meeting significantly strengthened regional and international collaboration, enhanced mutual understanding of national professional frameworks, and supported ongoing efforts toward harmonization of education, registration, and professional recognition of medical physicists in the Baltic region and neighbouring countries.

Kirill Skovorodko, PhD is a Medical Physics Expert at Vilnius University Hospital Santaros Klinikos and President of the Lithuanian Society of Medical Physicists.

Clinical MR Physics: State-of-the-Art Practice

Ho-Ling Anthony Liu and Xiaohong Joe Zhou (Editors)

AAPM Monograph No.42

Medical Physics Publishing, 1st edition 2025, 578 pages, contents: 29 chapter. Hardcover: ISBN 9781951134358, $165
eBook: ISBN 9781951134365, $165

If I were to tell you that this book is the proceedings of a 4.5-days AAPM Summer School held in June 2025 at Denver, Colorado, you might expect a lumped-together script consisting of PowerPoint presentations from that meeting. But the two editors, together with the faculty of this Summer School, have done a much better job in publishing a very valuable textbook in an excellent format, not only for the participants of this meeting, but for all Medical Physicists interested in MRI, as well as Medical Physics students looking for an introduction to the current status of this clinical field.

The 29 chapters are grouped into 6 parts, each consisting of 3 to 8 chapters averaging 10 to 30 pages in length. A layout with well-reproduced images and informative diagrams and tables in each chapter make this monograph a very nice book to read. The chapters come with lists of references of up to max. 8 pages in small print covering the cited literature up to 2024 for further reading.

The first part "Essentials of Clinical MR Physics" consists of 5 chapters of about 135 pages total, starting with the basics of "spins, signals relaxation, and image formation" and ending with "MR artifacts: the science behind their origin and the art of their interpretation". This is a compact introduction into MRI of its own that does not skip important detail information, e.g. on the phase refocussing gradients that I often have missed in other MRI-textbooks. The clinically used pulse sequence acronyms come with it as well, so the link to the specific applications are always present.

The second part "Facility Planning, Performance Testing, and Accreditation" consists of 3 chapters and is a short reference to the role of the medical physicist in getting the MRI-system into the clinic up and running. The third part "MR Safety" is the one with the most chapters (8), indicating that this is another important issue in clinical MR routine work of the medical physicist. To this end, not only issues of the strong magnetic field, magnetic gradients, and RF are addressed, but also with three chapters aspects of the safety of implants of patients and their current standards. I must note at this point, that this is a book by authors from the AAPM and so the main clinical background referred to is the one in the U.S.A., but here the corresponding international IEC-norm is referred to as well.

The fourth part "MR Protocols" with 4 chapters (neuro-, breast-, body-, musculoskeletal-protocols) gives an introduction on the process of protocol development and optimisation that should always include the aspects of the radiologist, physicist, and technologist. The aspects of optimisation of a given protocol for special purposes is well explained with an extended example of a brain protocol optimisation including the valuable warning that optimisation under time pressure might not be the best condition for it.

The fifth and sixth parts, "Quantitative and Advanced MR" (6 chapters) and "Emerging Technologies" (3 chapters), set the scope to ongoing developments in MRI. The individual authors address after the fundamentals of relaxometry of T1 and T2 of quantitative MRI its clinical applications in brain, heart, liver, and musculoskeletal imaging. The quantitative aspect is further deepened in a chapter on fat and iron deposition quantification. The following two chapters on the advanced MRI techniques of diffusion and perfusion MRI are presented by the editors themselves in about 20 pages each. The two chapters on "MR Spectroscopy" and "functional MR" close the part on advanced MR. While perfusion, diffusion/DTI and functional BOLD-protocols are already part of most modern commercial MRI systems, the spectroscopy-MRI seems to more a domain of the high and ultra-high field MRI systems, since they need special coils for other elements than hydrogen, too. Nevertheless, this application of MRI is an important counterpart to nuclear medicine imaging techniques for applications in oncology. This addresses the last part of the book after a chapter on the developments of lower as well as higher B0-fields and high-performance gradient systems. The size of the following chapter on MRI in radiation therapy indicates that this is a field of great importance since the diagnosis and treatment of cancer is one of the main issues in modern medicine. The role of synthetic CT generated from MR-data that has superior contrast information on soft tissue, as well as possibly information on the functional physiology of the tumour, is extensively explained for the purpose of radiation therapy treatment planning. Current development toward adaptive planning and treatment with MR-guided radiotherapy with special hybrid MR-linac systems of the two systems available on the market (ViewRay MRIdian, Electa Unity) is covered with details on motion management and gating techniques, too. The last chapter addresses the role of AI, which is the most challenging in my view, since this will be the subject that the future may bring us the biggest changes in clinical routine that we may not foresee in total now.

I liked very much the clear and systematic presentation of the content of this book, not only of the fundamentals, including the necessary definitions and formulas, but also of the clinical applications, including typical parameter sets to start from in one's own work in MRI protocol optimization. Even technical aspects of coils or MRI system design are addressed in this monograph. As stated in the preface of this book, the last AAPM Summer School on MR physics was in 1992, that produced proceedings that became indispensable for students and professionals. I do not hope that it will take another 34 years again to update it. But for the time being, I recommend this book to all interested readers, since I am sure that this book will also become as indispensable as its predecessor!

Markus Buchgeister entered the field of medical physics in radiation therapy at the university clinic of Tübingen in 1995. In 2010, he received a call for a position as a professor of medical radiation physics at the Berliner Hochschule für Technik (University of Applied Sciences and Technology) in Berlin. Since 2003, he has been engaged as co-opted DGMP board member for public relations and communications of the German Society for Medical Physics. Parallel, he served as chairman of the EFOMP Communication and Publications Committee from 2003 - 2009 and from 2009 - 2015 as German EFOMP delegate. In 2017 - 2018 he was chairman of the EFOMP Education and Training Committee and is now a German EFOMP delegate again.

The European Cancer Organisation and its Young Cancer Professionals Group.

The European Cancer Organisation (ECO) brings together European institutions and people working across cancer care with the aim of improving cancer policy at a European level. Its work is based on collaboration and dialogue, supporting practical actions that have a real impact on clinical practice and research.

These activities are organised through several thematic networks: workforce, inequalities, digital health, research policy, emergencies and crises, survivorship and quality of life, quality and treatment optimisation, HPV action, and prevention, early detection and screening. Since 2024, EFOMP has been actively involved in a number of these areas, particularly in prevention, early detection and screening, digital health, and workforce-related initiatives.

What makes ECO particularly strong is its multidisciplinary nature. Clinicians, researchers, engineers, legal experts and policy specialists work side by side, contributing different perspectives to the same challenges. An equally important part of ECO's work is its close collaboration with patient advocates and patient advisory committees. This constant dialogue helps ensure that policies and strategies are grounded in real patient experiences, keeping the focus on what ultimately matters most.

Within this context, the Young Cancer Professionals (YCP) group plays a key role. It brings together early-career professionals from very different backgrounds, united by a shared interest in improving cancer care and by the motivation to contribute beyond their own institutions. The group meets in person once a year at the European Cancer Summit in Brussels, held every autumn. I participated in the 2025 Summit and it was a great place to personally witness the closeness between healthcare professionals, policy makers and patients advocates.

Every two years, a new YCP Steering Committee is elected to help coordinate activities and represent the wider YCP community within ECO. I am honoured to have been elected as one of the ten members of the current Steering Committee. For me, this also represents an important step for medical physics, as it allows a young medical physicist to actively contribute to discussions at the European policy level. The current committee includes engineers, researchers, oncologists, nurses, patient advocates and a medical physicist, reflecting the diversity of skills needed to address the complexity of cancer care today.

In addition to acting as a link between early-career and senior ECO members, the YCP group also organises dedicated initiatives. Each year, two YCP roundtables are held. Last year, together with EFOMP Early Career Convener, Leticia Irazola Rosales, I took part in a roundtable focused on the importance of multidisciplinary teams in radiation therapy and their impact on patient care. This year, the first YCP roundtable will take place on the 3rd of March and it will be on the topic "Emerging technologies in cancer care: AI and digital health tools. What young professionals need to know".

Working within ECO also means being close to European policymakers. Being based in Brussels creates opportunities for direct interaction with those involved in shaping cancer-related policies at the European level. Young Cancer Professionals are often invited to provide input and perspectives this context, contributing to discussions that can influence future strategies.

Taking part in these activities is not only a valuable way to connect with colleagues across Europe, but also a concrete opportunity to contribute to meaningful change. I am very grateful for the chance to be involved in the YCP Steering Committee and particularly proud to represent EFOMP and its mission within this journey.

Figure 1. European Cancer Summit 2025 held on 19 & 20 November in Brussels.

Virginia Piva is a Medical Physics Resident at Niguarda Hospital in Milan and research fellow in particle therapy at the National Institute for Nuclear Physics. Her main professional interests are advances in radiotherapy and implementation of AI techniques in the clinic. Alongside the residency, she is committed to promoting public understanding of medical physics, using science communication to spotlight the field's value. She joined the C&P Committee in 2024.

Birmingham Brings the Radiotherapy Community Together to Shape the Future of Breathing-Motion Management.

Breathing motion management has become one of the most transformative areas in modern radiotherapy, redefining precision, adaptability, and patient-centred care. As techniques evolve and technologies advance, one thing remains clear: meaningful progress is driven by shared expertise and collaboration.

Reflecting this commitment to collective innovation, the **Breathing Control for Motion Management in Radiotherapy and Imaging Conference** will take place in **Birmingham on 16–17 April 2026**, hosted by **University Hospitals Birmingham (UHB)**.

Across the field, teams are advancing innovative approaches to stabilising and understanding respiratory motion, from extended breath-hold techniques to controlled ventilation and physiology-driven breathing strategies. These developments reflect a growing recognition that effective motion management lies at the heart of delivering accurate, reproducible, and personalised radiotherapy.

The 2026 conference is designed to harness this momentum. It will bring together experts from around the world who are redefining what is possible through advances in breathing control, motion stabilisation, and physiology-informed treatment delivery. Delegates will explore emerging technologies, hear from leading researchers, and engage in multidisciplinary discussions spanning clinical practice, physics, engineering, and patient experience.

The programme places strong emphasis on open dialogue, practical learning, and the exchange of ideas that can be translated directly into improved patient care. Rather than promoting a single technique or philosophy, the meeting celebrates the diversity of approaches shaping this rapidly evolving field, and the shared ambition that unites them.

Birmingham is proud to host a conference that reflects the creativity, curiosity, and collaborative energy of the global motion management community. As respiratory motion management continues to advance, this meeting offers a unique opportunity to connect, contribute, and help shape the future together.

Join our community:
As part of our commitment to advancing this field, we have established the Breathing Control in Radiotherapy Consortium (BRIC). It brings together radiographers, physicists, clinicians, and researchers working to advance breathing motion management across radiotherapy and imaging. The group focuses on breath-hold physiology, motion-control techniques, and patient-centred innovation, contributing to emerging national and international developments in this evolving field.

We invite you to join us at this EFOMP endorsed event: Breathing control in radiotherapy consortium

Tickets:
Tickets for the 2026 conference are now available (early-bird rates apply until 20 March, with discounts for students). Purchase Tickets Here

Abstract submission:
The latest information can be found on the website

#BRICMotionResearch
#breathingmotionmanagement

Stuart Green started work as a Medical Physicist in 1990 working across the areas of radiotherapy physics and radiation protection. He has served as President of the British Institute of Radiology and around the same time he was closely involved in the effort to bring proton radiotherapy to the NHS. He currently leads the Medical Physics team at University Hospital Birmingham, and his research is now focussed on Boron Neutron Capture Therapy together with a continued interest in the management of respiratory motion in radiotherapy.

Irma van Dijk is a senior scientific researcher at the department of Radiation Oncology of the Amsterdam UMC. She started her career as a diagnostic and radiotherapy radiographer. Her clinical experience forms a solid base for her research activities, focusing on NIMV-supported breathing control strategies to reduce respiratory motion.

Arjan Bel started his career in radiotherapy in the early 1990s as a PhD student, working on image guidance with EPIDs. Since joining Amsterdam UMC in 2004, he has become Professor of Radiotherapy Physics. Passionate about image guided adaptive radiotherapy, the accuracy limitations due to breathing motion inspired him to initiate research on mechanical ventilation. He co-organised the first symposium edition in Amsterdam in 2024.

Sofia Parveen is an organiser and Scientific Committee member for the 2026 Breathing Control for Motion Management in Radiotherapy and Imaging Conference. A therapy radiographer with over 21 years' experience in radiotherapy treatment and treatment planning, she specialises in breathing-motion management and patient-centred innovation, advancing research and clinical practice through collaboration.

Cross-YGN Initiative – Meetings and New Plans for 2026

The cross-sectional cooperation (ENEN2plus WP3 – Task 3.4) led by the European Nuclear Society, bringing together ENS-YGN, the **EFOMP Early Careers Group**, the International Radiation Protection Association YGN, and the FuseNet Student Council, experienced **a very active semester**. Through workshops held across Europe, in-person and online meetings, the initiative continued its mission to **connect young professionals and students across nuclear disciplines**, strengthening dialogue and mutual understanding.

Figure 1. Group photo of the participant at the 2nd ENEN BSc and MSc Nuclear Competition and Summer School.

- **Cross-YGN Workshop - "Nuclear Paths: Education, Networks and Careers Opportunities" – Budapest, 30th June 2025, 2nd BSc and MSc Nuclear Competition and Summer School**

Invited by the Budapest University of Technology and Economics, the Cross-YGN initiative replicated a successful format previously delivered in Bratislava. **The EFOMP Early Careers Group (SIG) was represented by Antonio Jreije**, contributing a medical physics perspective to the discussions. Targeting international BSc and MSc students, the workshop was structured into two complementary sessions. The first focused on career pathways in the nuclear sector, illustrating the diversity of professional opportunities through personal experiences shared by YGN representatives. The second session addressed the importance of networking, introducing the different Young Generation Networks active in Europe, their missions, and concrete opportunities for engagement.

Figure 2. Group photo of the participant at the 4th ENEN European Nuclear Competition for Secondary School Pupils

Compared to previous editions, a noticeably higher level of awareness and interest in YGNs emerged among participants, confirming the value of early exposure to professional networks.

- **Cross-YGN Workshop - “My FutureS in Nuclear - From Curiosity to CareerS” – Bologna, 17th July 2025, 4th ENEN European Nuclear Competition for Secondary School Pupils**

As part of the 4th ENEN European Nuclear Competition for Secondary School Pupils, held in Bologna, ENS proposed a dedicated Cross-YGN workshop aimed at engaging younger audiences. The event took place at the ENEA Brasimone Research Centre and involved 30 international finalists aged 12–16, selected for their creative video presentations on nuclear topics.

Figure 3. Core Committee Meeting of the European Nuclear Society – Young Generation Network (ENS-YGN).

Representing EFOMP and the Italian Medical Physics Association – Youth, Elena Cantoni and Francesca Punzetti joined young professionals from other networks to share their education and career journeys. The workshop combined interactive elements — including icebreakers and a “Guess Who” game — with short personal presentations. By blending curiosity-driven discussion, practical advice, and real-life examples, **the session successfully stimulated engagement and encouraged pupils to explore future studies and careers in nuclear science and medical physics**.

After the summer break, **Anna-Maria Fanou from EFOMP Early Careers Group (SIG)** had the opportunity to meet and discuss in person with representatives from the different young sections of this cross-sectional collaboration during the Core Committee Meeting (CCM) of the European Nuclear Society – Young Generation Network (ENS-YGN). Taking place in Stockholm (10-12 October 2025), the CCM hosted over 30 representatives from 14 different countries and YGNs.

Figure 4. Cross-YGN Webinar “Nuclear Education & Training in Africa and Europe Landscape” held on 4 December 2025.

The Cross-YGN initiative also started contributing to a new **webinar series**, jointly with African and international YGNs. The series aims at sharing experiences and knowledge between early career nuclear professionals across the globe. The first session was about “Nuclear Education & Training in Africa and Europe Landscape” (4th December), which highlighted the essential role of collaboration in strengthening training, mobility and opportunities between Europe and Africa. Two more episodes, dedicated to medical physics and fusion research, are currently under preparation.

Finally, the Cross-YGN collaboration is preparing **the workshop “Evolving Skills and Learning Tools for a Changing Nuclear Workforce”**, led by young professionals at NESTet2026 (Brussels, 2-4 March), and restarted the **“Powered by Passion” podcast series**. This second season will host young nuclear engineers, fusion researchers, radiation protection professionals, and medical physicists. Indeed, two new episodes will include **Leticia Irazola Rosales, and Antonio Jreije**, respectively Chair and Vice Chair of the first Steering Committee of the **EFOMP Early Careers Group (SIG)**.

Mattia Baldoni is Communications and Project Manager at the European Nuclear Society, which promotes the development of nuclear science and technology and the understanding of peaceful nuclear applications. Based in Brussels, ENS brings together more than 12,000 professionals from the academic world, research centres, industry, and authorities. ENS is also a long-standing partner of ENEN, and it is participating in the ENEN2Plus project, leading the Task 3.4. (Setting up networking cross-YG and cross-professional organizations).

Anna Maria Fanou is a member of the Steering Committee of the Early Career Medical Physicists Special Interest Group (SIG) in EFOMP. She is currently based in Sweden and works as an Application and Physics Specialist at RaySeach Laboratories in Stockholm. She has a Medical Physics background, originally coming from Greece.

10th Anniversary Baltic Congress of Radiology 2026

The Baltic Congress of Radiology (BCR) represents a long-standing and successful collaboration among the radiological communities of Lithuania, Latvia, and Estonia. The first Baltic Congress of Radiology, supported by the national radiological associations of the three Baltic States, was held in 2006 in Kaunas, Lithuania. Feedback from participants at this first meeting clearly demonstrated the importance of regular scientific and professional meetings for radiology professionals in the region. These meetings were recognised as essential platforms for sharing scientific and clinical advances, fostering professional networks, addressing common challenges, and strengthening regional cooperation.

Since its beginning, the Baltic Congress of Radiology has been organized biennially, rotating among the Baltic countries. The congress has taken place in Kaunas (2006), Tartu (2008), Riga (2010), Vilnius (2012), Pärnu (2014), Liepāja (2016), Kaunas (2018), Tallinn (2022), and Riga (2024). The 2020 congress was postponed due to the COVID-19 pandemic. In 2026, the congress will return to Lithuania, marking the 10th anniversary edition of this important regional scientific event.

The 10th Baltic Congress of Radiology 2026, which will be held on 1-3 October 2026 in Vilnius, will bring together radiologists, radiology technologists, medical physicists, researchers, educators, and other professionals from across the Baltic region and beyond. The scientific programme is developed by an international scientific committee composed of highly qualified experts from multiple countries, en-

Figure 1. Vilnius Cathedral situated in Vilnius Old Town.

suring a high academic standard and broad international perspective. The congress will focus on contemporary topics in diagnostic and interventional radiology, AI, nuclear medicine, technological innovation, clinical best practices, education, and research, reflecting the evolving role of radiology in modern healthcare systems.

Attendance at the Baltic Congress of Radiology has steadily increased over the years, demonstrating its growing relevance and impact. Approximately 720 participants attended the congress in Tallinn in 2022, while the 2024 meeting in Riga attracted around 900 participants. For the 2026 congress in Vilnius, the organisers anticipate approximately 1,000 participants, highlighting the expanding interest and engagement within the regional and international radiological community.

The 2026 congress is notable not only for its anniversary status but also for a significant programmatic development. For the first time, medical physics and radiation protection will be addressed through a dedicated scientific session. This initiative reflects the increasing recognition of the critical role that medical physicists play in ensuring patient safety, optimising imaging quality, advancing radiation protection standards, and supporting technological innovation in radiology. It also reflects the close collaboration and recognition of the role of medical physicists in the field of radiology. The inclusion of this dedicated session represents an important step toward deeper interdisciplinary collaboration within the radiological sciences.

The Organising Committee warmly invites medical physicists and radiation protection specialists from neighboring countries, Europe and other regions to participate in the 10th Baltic Congress of Radiology. Their active involvement will strengthen the scientific dialogue, enhance multidisciplinary cooperation, and further reinforce the role of medical physics within the radiological community. The 2026 congress in Vilnius aims to serve not only as a celebration of two decades of collaboration but also as a forward-looking forum shaping the future of radiology in the Baltic region and beyond. While attending the congress, participants will also have the chance to explore Vilnius, a vibrant European capital, known for its rich history and beautifully preserved medieval Old Town is a UNESCO World Heritage site featuring Gothic, Renaissance, and Baroque architecture. From historic architecture, museums and galleries to contemporary cuisine, green spaces, and a lively social scene, Vilnius offers an inspiring setting that combines professional exchange with memorable cultural experiences.

Kirill Skovorodko, PhD is a Medical Physics Expert at Vilnius University Hospital Santaros Klinikos and President of the Lithuanian Society of Medical Physicists.

Birute Griciené, PhD is a recognized radiation protection expert in Lithuania. She is an associate professor at the Faculty of Medicine of Vilnius University and head of the Radiation Protection Department at Vilnius University Hospital Santaros Klinikos. She is also an IAEA lecturer and expert for national and regional training courses. She is a member of Radiation Protection Society, Medical Physicists Society and Lithuanian Radiologists Society.

Saulius Lukosevicius, MD, PhD is a radiologist specializing in Neuroradiology with more than 20 years of clinical experience. Since 2022, he has served as Chair and Professor of Radiology at the Lithuanian University of Health Sciences, Kaunas. He is Chair of the Kaunas Regional Radiology Association and, since 2021, President of the Lithuanian Radiologists' Association. He has held leading roles in major international radiology congresses and will serve as President of the Baltic Congress of Radiology 2026.

Joint ICTP-IAEA Workshop on Reference Dosimetry in External Beam Radiotherapy and Brachytherapy

Figure 1. Official group photo of the workshop.

Quite recently, IAEA published two technical report series (TRS) relevant to radiation therapy, IAEA TRS-492 "Dosimetry in Brachytherapy – An International Code of Practice for Secondary Standards Dosimetry Laboratories and Hospitals" in 2023, and IAEA TRS-398 (Rev. 1) "Absorbed Dose Determination in External Beam Radiotherapy" in 2024 revising the former version dating all the way back to the year 2000. These two reports disseminate detailed, yet straightforward guidelines to perform clinical radiation dosimetry measurements in a harmonised way, essentially including clear traceability to metrological primary standards and proper handling of uncertainty estimation.

In the beginning of November 2025, a motivated group of 60 selected participants gathered in the Abdus Salam International Centre for Theoretical Physics (ICTP) in Trieste, Italy, to learn the contents of these two IAEA TRS publications diligently. The five days of the workshop were filled with lectures, group work, and exercises to cover not less than both the theoretical background and practical implementation of the IAEA codes of practice for dosimetry measurements in low, medium, and high energy photon beam, electron beam, proton and heavier ion beam radiotherapy as well as brachytherapy applications. Not a small task, but efficient and rewarding to perform together with an interesting bunch of people from versatile backgrounds, sharing the focus.

The workshop participants as well as us faculty members included both medical physicists working in radiation oncology and radiation metrologists working at the standard dosimetry laboratories providing calibrations, which was constructive for each and every one: after all, in clinical dosimetry, rigorous formalism meets hospital reality. Establishing and disseminating calibration quantities requires profound understanding of the practical circumstances and available resources at the clinics; and, in the midst of performing advanced patient treatments with limited time and budget, it is necessary to recognize the reasoning behind the carefully implied formalism for quality assurance measurements and uncertainty analysis requirements. Codes of practice need to be agreed and co-operated warmheartedly by all parties involved, not to forget further development.

Thus, the more than 400 pages of technical report contents were absorbed together with insightful discussions and collective atmosphere. Exercise sessions were given weight in the program to make theoretical handling more tangible and easier to apply in real life. Regarding the workshop theme, many participants reported on their own practical sessions – some had also prepared posters to be viewed during the breaks – which sparked further conversations and new contacts for collaborations. As always, noticing that someone from the other side of the globe is asking the same questions is useful; subsequently, for instance, an idea for a special meeting focusing on dosimetry in ophthalmic brachytherapy was thrown around.

The hosting ICTP venue should certainly be acknowledged for offering a focus-steering environment next to the picturesque Miramare castle and far enough from the luring Trieste city centre attractions. The International Day of Medical Physics was celebrated appropriately at the end of the workshop with a seminar highlighting research by the alumni and current students of the ICTP Master of Advanced Studies in Medical Physics (MMP) programme.

This IAEA workshop has now been arranged three times: twice in English and once in Spanish. The next opportunity, in Russian, is planned for 2026.

Check out:

https://www-pub.iaea.org/MTCD/Publications/PDF/DOC-010-492_web.pdf
https://www-pub.iaea.org/MTCD/Publications/PDF/p15048-DOC-010-398-Rev1_web.pdf
https://www.iaea.org/events
https://www.ictp.it/home/scientific-calendar

Vappu Reijonen is a MPE, PhD, at the Helsinki University Hospital Cancer Centre, Finland. She works as a clinical medical physicist in radiation oncology including versatile tasks in molecular radiotherapy, external beam radiotherapy, and brachytherapy. She acted as a lecturer at the ICTP-IAEA workshop via EFOMP collaboration.

Safety and Radiation Protection in Surgical and Interventional Procedures in Cyprus

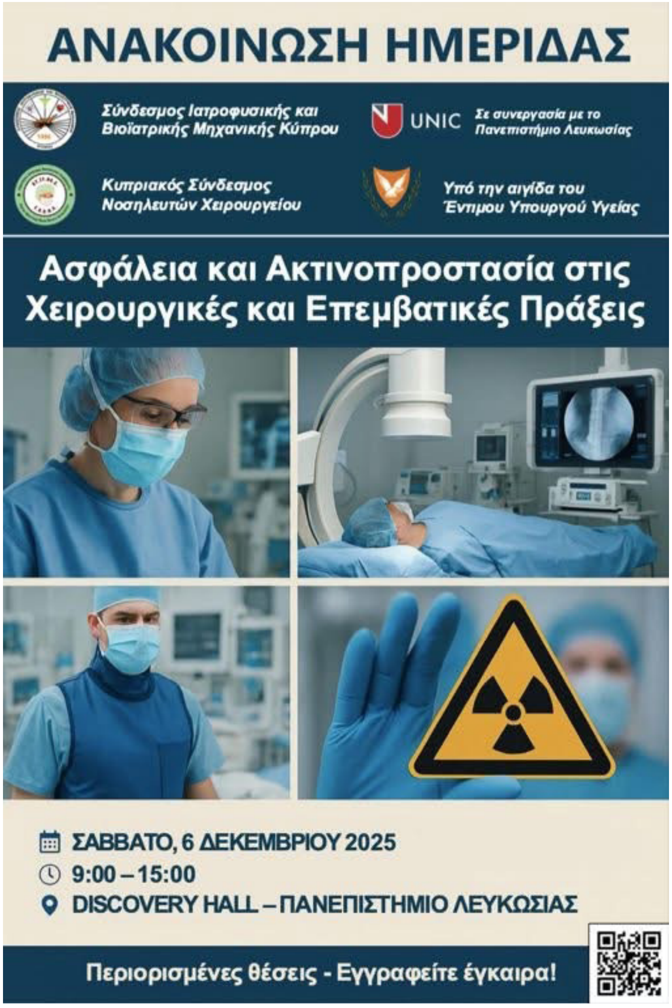


Figure 1. Official poster of the workshop "Safety and Radiation Protection in Surgical and Interventional Procedures", held in Cyprus.

The workshop "Safety and Radiation Protection in Surgical and Interventional Procedures", held in Cyprus, highlighted the importance of interdisciplinary collaboration in fostering a strong culture of radiation safety in clinical practice.

Medical Physicists, nurses, clinicians, and academics from Cyprus came together with a shared objective: to ensure the protection of both patients and healthcare staff through the appropriate use of ionizing radiation. The active participation of nursing professionals was a key element of the workshop, reflecting their essential role in surgical and interventional environments and their continuous presence in radiation-exposed settings.

Discussions and knowledge exchange emphasised that effective radiation protection relies on close cooperation between Medical Physicists and nurses. By combining scientific expertise with clinical experience, participants explored practical approaches to optimising workflows, improving safety practices, and strengthening awareness in daily clinical routines.

Medical Physicists play a central role not only through technical support, but also through education, guidance, and continuous communication with healthcare professionals. Such engagement is fundamental to building shared responsibility and sustainable radiation protection practices across healthcare institutions.

The workshop was characterised by high engagement and constructive dialogue, reinforcing a clear message: radiation safety is a collective effort. Initiatives of this kind strengthen professional collaboration in Cyprus and contribute to safer, more informed interventional care for the benefit of the wider healthcare community.

Figure 2. Medical Physicists and nursing professionals participating in the workshop "Safety and Radiation Protection in Surgical and Interventional Procedures" in Cyprus.

Anna Valianti is a Medical Physicist and Research Engineer with professional involvement in radiation protection, medical physics education, and interdisciplinary healthcare initiatives. Her work focuses on promoting radiation safety culture and collaboration among healthcare professionals in clinical and interventional settings.

Enhancing Quality in Radiology: The IAEA QUAADRIL Workshop

Figure 1. IAEA QUAADRIL Workshop participants, Coimbra, Portugal.

From 1st to 5th of December, Coimbra (Portugal) hosted the Regional Workshop on Comprehensive Clinical Audit in Diagnostic and Interventional Radiology using the IAEA QUAADRIL Methodology. The workshop brought together professionals from diagnostic and interventional radiology across Europe with the shared objective of strengthening quality management systems and clinical audit practices in radiology departments.

The course was led by the IAEA Technical Officer Olivera Ciraj-Bjelac and a multidisciplinary team of IAEA experts with extensive auditing experience: Dr. Efthimios Agadakos (radiographer), Dr. Sasa Vujnovic (radiologist), and Dr. Ivana Kralik (medical physicist). This balanced representation of professions reflected the core philosophy of the QUAADRIL methodology, which promotes a comprehensive, team-based approach to quality and safety in radiology.

From the very first day, one of the most striking aspects of the workshop was the diversity of participants. Representatives from 11 European countries shared presentations on their national and local realities, offering a valuable overview of differences in resources, equipment availability, quality management systems, examination profiles and regulatory frameworks. These exchanges quickly highlighted common challenges, particularly the shortage of medical physicists in diagnostic radiology in several countries. The strong motivation expressed by many institutions to recruit and integrate medical physicists into radiology teams was a recurring theme throughout the week and reinforced during both discussions and practical exercises.

The workshop began with a solid theoretical foundation. Key concepts such as quality management, quality assurance and quality control were explored in depth, clarifying their differences and, more importantly, how they are interconnected within a robust quality system. Participants were introduced to essential components of quality infrastructure, including quality manuals, Standard Operating Procedures (SOPs) and Key Performance Indicators (KPIs). Considerable attention was given to distinguishing meaningful KPIs from poorly designed ones, emphasizing their role in driving improvement rather than simply collecting data.

A defining strength of the workshop was the strong focus on practical, hands-on activities. Every afternoon, as well as the final morning, participants worked in multidisciplinary groups, guided by the experts. These sessions included the preparation of SOPs, group exercises on KPIs and risk management in diagnostic radiology departments and the completion of self-assessment forms from the perspectives of radiologists, radiographers and medical physicists.

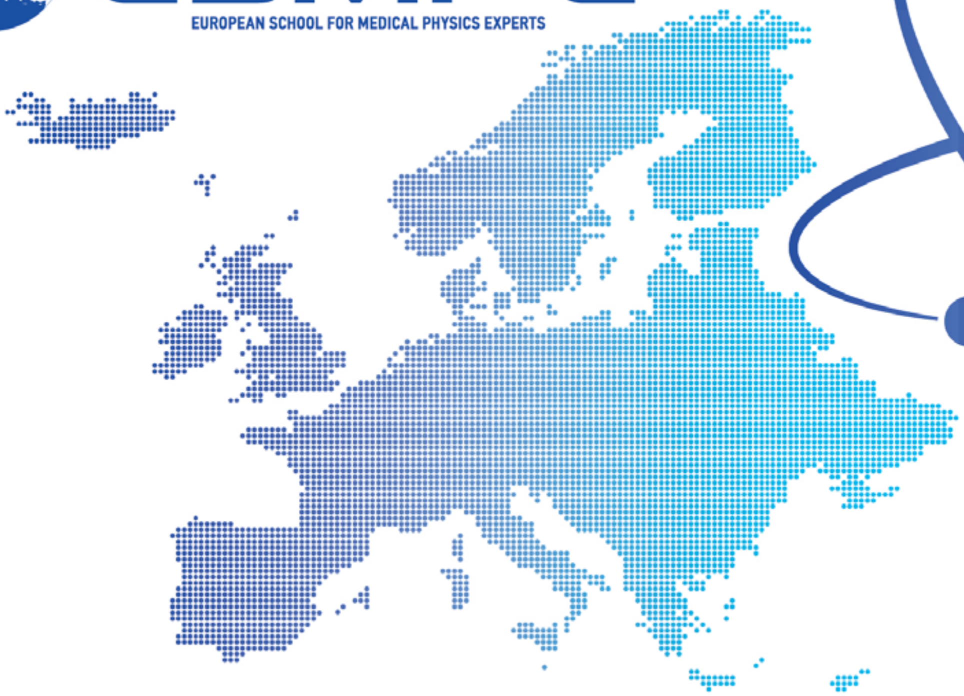
For the self-assessment exercise, each group could choose either a real radiology department or a fictional one constructed from shared experiences. In the group I participated in, we based our work on an actual radiology department from Türkiye. Having a radiologist, a radiographer and a medical physicist from the same department within the group provided a particularly comprehensive and realistic perspective. Beyond the technical learning, these sessions fostered meaningful professional connections and encouraged open discussion about challenges and good practices across countries.

The practical programme culminated in a mock audit and role-play exercise, where groups simulated the exit briefing of a clinical audit. Using the self-assessment forms prepared by another group, each team conducted a mock audit and presented their findings. This exercise proved both highly educational and enjoyable, creating a relaxed but realistic environment to practice communication skills. On the final day, groups presented their exit briefings to the IAEA experts and all participants, receiving constructive feedback on improvement points and on how to communicate sensitive findings effectively.

A key message reinforced throughout the workshop was that a clinical audit is not an inspection. Its purpose is not to punish, but to identify weaknesses and promote improvement through well-formulated recommendations. This mindset, central to the QUAADRIL methodology, resonated strongly with participants.

Overall, the workshop was an excellent learning opportunity, combining theory, practice and international collaboration. It highlighted the essential role of medical physicists in diagnostic and interventional radiology and demonstrated how multidisciplinary clinical audits can drive meaningful improvements in quality and patient safety across Europe.

Rita Albergueiro is a Medical Physics resident specializing 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 Center in projects on Medical Physics, Radiobiology, and Radiation Protection. She joined EFOMP's C&P Committee in 2025.



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**

Apr 23rd, 2026 - Apr 25th, 2026
ESMPE on Advancing Breast Imaging with AI
Mövenpick Conference Center, Tallin, 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 16th, 2026 - Sep 19th, 2026
57. Jahrestagung der Deutschen Gesellschaft für Medizinische Physik
Bamberg, Germany

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
Patient Discharge following Molecular Radiotherapy
Valencia, Spain

Sep 23rd, 2026 - Sep 26th, 2026
The 6th European Congress of Medical Physics (ECMP 2026)
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

EFOMP STRUCTURE

EFOMP Executive Committee

President

Efi Koutsouveli

Vice President

Dimos Baltas

Secretary General

Brenda Byrne

Treasurer

Jaroslav Ptáček

Communications & Publications Committee

Chairperson

Irene
Polycarpou

Past Chairperson

Oleksandra
V. Ivashchenko

Internet Manager

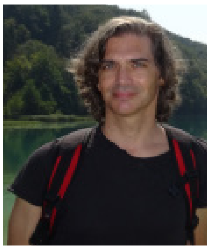
Jurgita
Laurikaitiené

Secretary

Antonio
Jreije

European & International Matters Committee

Chairperson



Antonio Lopez
Medina

Education & Training Committee

Chairperson

Veronica
Rossetti

Vice Chairperson

Christina
Zacharatou

Professional Matters Committee

Chairperson

Itembu
Lannes

Projects Committee

Chairperson

Dimitris Visvikis

Vice Chairperson

Luis Brualla

Scientific Committee

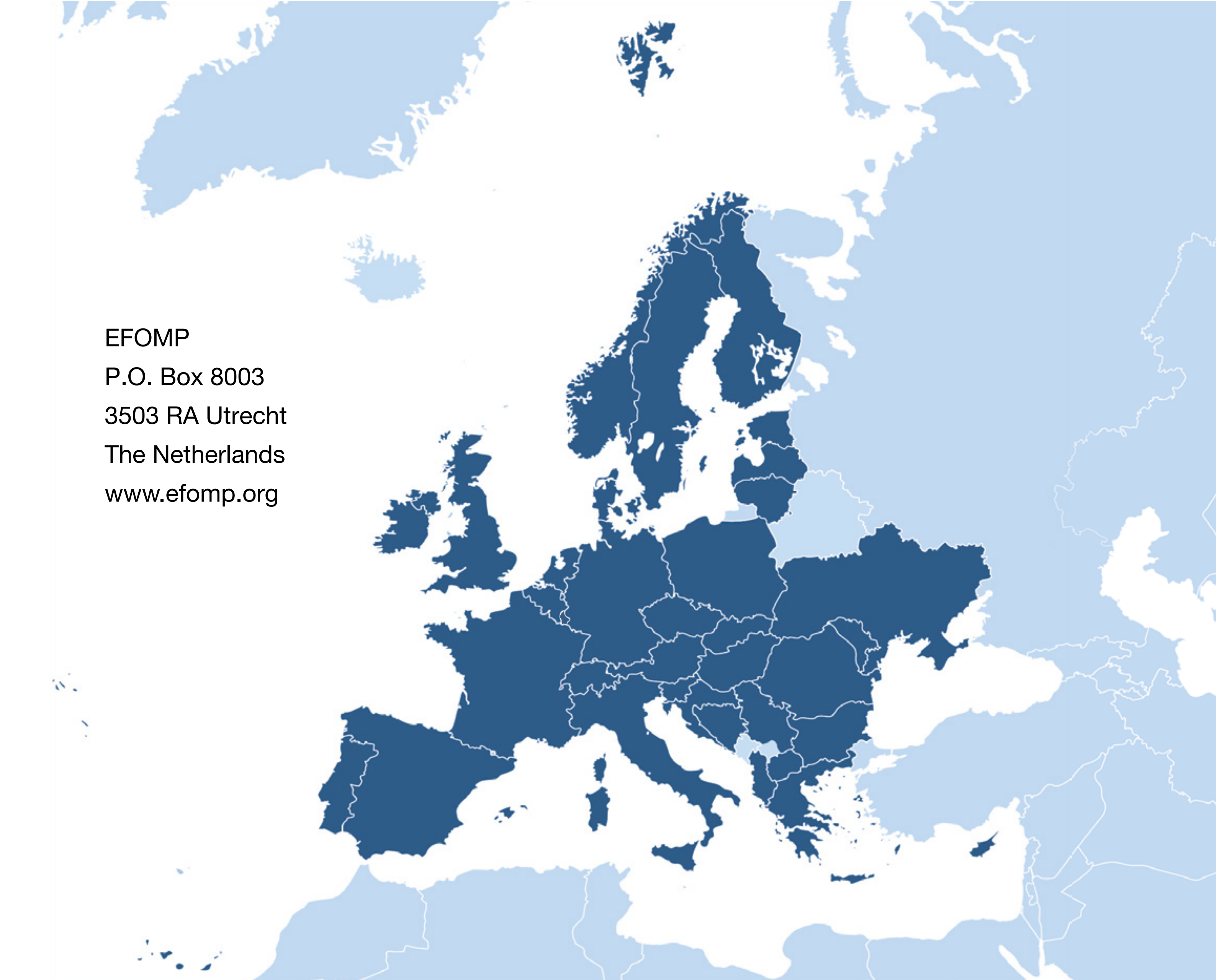
Chairperson

Eeva Boman

Vice Chairperson

John Dickson

EFOMP Company Members



EFOMP
P.O. Box 8003
3503 RA Utrecht
The Netherlands
www.efomp.org

EFOMP

EUROPEAN FEDERATION OF ORGANIZATIONS FOR MEDICAL PHYSICS

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”.

For more news and information about EFOMP activities please follow us on social networks or visit our website

www.linkedin.com/company/efomp www.efomp.org

/efompweb /EFOMP.org @EFOMP1 EFOMP_org