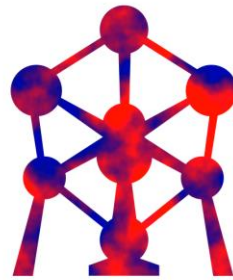




EFOMP



ESMPE

European School for  
Medical Physics Experts

*ESTRO recommended event*

## **ESMPE European School for Medical Physics Experts – Prague January 2017**

### **Imaging in Radiotherapy**

January 26 – January 28, 2017  
Prague, Czech Republic

The EFOMP in collaboration with the Czech Association of Medical Physicists and the Department of Dosimetry and Application of Ionizing Radiation of Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague would like to invite you to the next **ESMPE\_RT 2017**.

The school will be aimed at advanced tasks connected with **Imaging in Radiotherapy**. The school will cover the main physics aspects of the different imaging technologies used to support target volume definition, patient positioning and response to treatment assessment, during radiotherapy. This two-and-half day event will be accredited and is intended for practicing clinical Medical Physicists who are at the level of a Medical Physics Expert (MPE) in Radiotherapy or working towards becoming an MPE. As in last year's school, there will be an optional examination at the end for those seeking a higher level of certification beyond attendance.

### **Content**

**Advanced structural imaging for radiotherapy simulation and planning** - 4DCT and MRI imaging for simulation and planning. Technological requirements, protocol optimization for radiotherapy applications, imaging issues, Quality Assurance.

**Advanced quantitative imaging for radiotherapy planning** - PET and fMRI imaging for radiotherapy planning. Methods for automatic functional volume segmentation with clinical examples. MRI diffusion and perfusion techniques for target volume definition and response to treatment assessment

**Advanced imaging for treatment adaptation** - MRI Image guided radiotherapy. Applications of quantitative imaging provided by PET and MRI in treatment adaptation according to early response.



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**Imaging for treatment guide and verification** - IGRT, CBCT, Ultrasound, EPID and fluoroscopy, Optical surface imaging : Devices, practices, Quality assurance, clinical examples.

**Cone beam CT** - Acceptance testing and Quality controls, dosimetry, use of CBCT in adaptive radiotherapy, motion management

**Tools for image integration in the radiotherapy workflow** - Overview of image registration methods, deformable image registration, clinical application of DIR, ROI propagation in adaptive radiotherapy, atlas based segmentation, practical demonstrations.

### Final exam

The final exam is voluntary. Participants can gain double MPE credits when successfully pass the test. The basic number of CPD credits (for attendance only) is 18.

### Organizers

**Jaroslav Ptáček, Tereza Hanušová** (Czech Republic)  
**Gianfranco Loi** (Scientific Chair), **Alberto Torresin** (Chair of the School), **Marco Brambilla** (EFOMP Secretary General), **John Damilakis** (EFOMP President)

### Lecturers

<b>Jens M. Edmund</b>	Herlev and Gentofte Hospital, University of Copenhagen, Department of Oncology, Division of Radiotherapy, Copenhagen, Denmark
<b>Christian Fiandra</b>	University of Torino, Department of Oncology, Torino, Italy
<b>Rob Tijssen</b>	University Medical Center - Utrecht, The Netherlands
<b>Gianfranco Loi</b>	University Hospital of Novara, Department of Medical Physics – Novara, Italy
<b>Emiliano Spezi</b>	University of Cardiff, School of Engineering – Cardiff, UK
<b>Alberto Torresin</b>	Hospital of Niguarda, Department of Medical Physics – Milano, Italy
<b>Uulke van der Heide</b>	Netherlands Cancer Institute - Amsterdam, The Netherlands
<b>Stina Svennson</b>	Raysearch Laboratories, Stockholm, Sweden
<b>Dimitris Visviskis</b>	INSERM - Brest, France

### Time-table

26 <sup>th</sup> January 2017 Thursday	Title	Description	Lecturer
<b>8:00-9:00</b>	<b>Registration</b>		
9:00-10:00	The state of art of imaging for radiotherapy	An overview of structural and functional imaging for tumor volume definition and advanced applications in radiotherapy	Dimitris Visviskis
<b>10:00-10:30</b>	<b>Coffee break</b>		
10:30-11:30	4DCT imaging for simulation and planning	Technological requirements, commissioning, imaging issues and quality assurance.	Christian Fiandra
11:30-12:30	The state of art of imaging for IGRT	In room and Linac based imaging for advanced IGRT and IGART techniques, new challenges and developments.	Rob Tijssen
<b>12:30-14:00</b>	<b>Lunch break</b>		
14:00-15:00	PET imaging for radiotherapy planning	Methods for automatic functional volume segmentation with clinical examples, how to use the functional segmented volume in treatment optimization	Dimitris Visviskis
15:00-16:00	Advanced fMRI imaging for radiotherapy planning optimization	MRI diffusion and perfusion, assessing geometrical accuracy, reproducibility and parameter standardization. Acquisition protocols and data analysis with dedicated software.	Uulke van der Heide
<b>16:00-16:30</b>	<b>Coffee break</b>		
16:30-17:30	MRI Image guided radiotherapy	New technology of Hybrid delivery system with MRI on board. Commissioning, challenges and new developments for adaptive radiotherapy.	Rob Tijssen
17:30-18:30	5D Image for radiotherapy	Exploring the potentiality and the applications of quantitative imaging provided by PET and MRI in treatment adaptation according to early response. Clinical examples.	Uulke van der Heide
<b>20:00-23:00</b>	<b>Social dinner - participants + lecturers</b>		

<b>27<sup>th</sup> January 2017 Friday</b>	<b>Title</b>	<b>Description</b>	<b>Lecturer</b>
<b>8:00-9:00</b>	<b>CBCT in radiotherapy</b>	CBCT acquisition and reconstruction. CBCT imaging issues: Implementation of clinical protocols for IGRT	Jens Edmund
<b>9:00-10:00</b>	<b>MRI based simulation and planning</b>	Technological requirements, protocol optimization for radiotherapy applications, imaging issues, synthetic CT generation methods for planning, quality assurance	Jens Edmund
<b>10:00-10.30</b>	<b>Coffee break</b>		
<b>10:30-11:30</b>	<b>Ultrasound imaging in radiotherapy</b>	Devices, practice, QA, clinical application: pelvis, breast.	Christian Fiandra
<b>11:30-12.30</b>	<b>EPID and Fluoroscopic imaging</b>	Hardware, software, QA clinical application, in vivo dosimetry, real time plan verification	Emiliano Spezi
<b>12:30-14:00</b>	<b>Lunch time</b>		
<b>27<sup>th</sup> January 2017 Friday</b>	<b>Title</b>	<b>Description</b>	<b>Lecturer</b>
<b>14:00-15:00</b>	<b>Acceptance testing and QC of CBCT systems</b>	Acceptance/commissioning testing: purpose, types, examples.	Alberto Torresin
<b>15:00-16:00</b>	<b>CBCT imaging dose evaluation</b>	Dosimetry methods for CBCT image dose evaluation for organ and tissues, demonstration, examples.	Emiliano Spezi
<b>16:00-16:30</b>	<b>Coffee break</b>		
<b>16:30-17:30</b>	<b>CBCT for Image Guided Adaptive Radiotherapy</b>	Protocol optimization, challenges and applications in head and neck, lung and pelvis.	Gianfranco Loi
<b>17:30-18:30</b>	<b>4DCBCT for motion management</b>	How to implement, protocol optimization, QA, application in Stereotactic Ablative Radiotherapy.	Christian Fiandra

<b>28<sup>th</sup> January 2017 Saturday</b>	<b>Title</b>	<b>Description</b>	<b>Lecturer</b>
<b>8.00-9.00</b>	<b>Image registration in radiotherapy</b>	Overview of image registration methods, deformable image registration, clinical application of DIR, ROI propagation in adaptive radiotherapy, atlas based segmentation.	Stina Svensson
<b>9.00-10.00</b>	<b>Deformable image registration challenges: assessing the accuracy for contour propagation and dose mapping</b>	Practical demonstration with examples.	Stina Svensson
<b>10:00-10:30</b>	<b>Coffee break</b>		
<b>10.30-11:30</b>	<b>Optical surface imaging in radiotherapy</b>	Devices, practice, QA, advanced application: Deep breath hold inspiration.	Gianfranco Loi
<b>11.30-12.00</b>	<b>Image sharing in radiotherapy</b>	Open discussion on real and future scenarios about image sharing with Image Departments (Radiology, Nuclear Medicine)	Alberto Torresin
<b>12:30-14:00</b>	<b>Final examination</b>		

### Further information

<b>Course language</b>	English
<b>Level</b>	MP to MPE
<b>Registration fee</b>	<b>300 €</b> 2 main meals, 5 coffee breaks included, 1 social dinner
<b>Reduced registration fee</b> - subsidized by EFOMP - first-come, first-served policy	<b>150 €</b> - for the first 15 attendees (max. 3 from one country) coming from the following European countries: Albania, Belarus, Bosnia, Herzegovina, Bulgaria, Croatia, Cyprus, Estonia, Greece, Hungary, Kosovo, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Turkey, Ukraine.



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<b>Maximum number of participants</b>	<b>50</b>
<b>Duration</b>	<b>26<sup>th</sup> Jan 2017 – 28<sup>th</sup> Jan 2017</b>
<b>Study load</b>	18 hours of lectures and demonstrations
<b>Venue</b>	Department of Dosimetry and Application of Ionizing Radiation, Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague, Břehová 7, 115 19 Prague 1, CZECH REPUBLIC
<b>GPS coordinates</b>	<b>50°5'27.737"N, 14°24'58.713"E</b>
<b>Accommodation</b>	Individual
<b>Information, program, etc.</b>	<a href="http://www.csfm.cz/winter2017.html">www.csfm.cz/winter2017.html</a>
<b>Registration</b>	Electronic registration via <a href="http://www.csfm.cz/winter2017.html">www.csfm.cz/winter2017.html</a>
<b>Registration period</b>	<b>1 August 2016 – 20 Jan 2017</b>

For all practical information, including accommodation and public transport in Prague, please contact Czech part of organizing committee: [winter2017@csfm.cz](mailto:winter2017@csfm.cz).

Electronic registration and e-mail address will be functional from 1 Aug 2016.