

**ESMPE European School for Medical Physics Experts**

# **State of the art and new trends of angiographic equipment: Image quality, Patient and Staff dosimetry**

**Jointly organised by ESMPE and COCIR, endorsed by ESR**

**4<sup>th</sup>-6<sup>th</sup> July 2019, Prague, Czech Republic**

The EFOMP and COCIR (The European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry) 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 on **Interventional Radiology 2019**.

The school will be aimed at advanced tasks connected with Angiographic Equipment. The school will cover the main physics aspects of the angiographic equipment technology, patient and staff dosimetry, and optimization.

This edition is jointly organized by EFOMP and COCIR and is endorsed by ESR. Lecturers identified by COCIR will give insides on the new trends for angiographic equipment.

This two-and-half day event will be accredited by EBAMP (European Board of Accreditation for Medical Physics) and is intended for practicing clinical Medical Physicists who are involved in the Interventional field. 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**

**State of the art and new trends of angiographic equipment** – Up-to-date components and new developments (hardware and software)

**Patient dosimetry** – Equipment Dosimetry and Patient Specific Dosimetry – Managing patient dose with skin dose maps and dose tracking systems – Trigger values and Interventional DRL with complexity

**Staff dosimetry** – Staff dosimetry protocols with a focus on eye lens dosimetry

**Image quality evaluation** – Setting CT protocols per specific clinical indications

## **Final exam**

The final exam is voluntary. Participants can gain additional credits when successfully pass the test.

## **Organizers**

**Jaroslav Ptáček, Tereza Kráčmerova** (Czech Republic)

**Annalisa Trianni** (Scientific Chair), **Alberto Torresin** (Chair of the School)



**EFOMP**



**ČSFM**  
CZECH ASSOCIATION OF MEDICAL PHYSICISTS



## Time-table

Thursday 4 <sup>th</sup> July 2019				
	Session	Title	Description	Lecturer
8:00-9:00	Registration			
9:00-9:30	Setting the Scene	Interventional Radiology Procedures	The interventionalists will explain the most common interventional procedures in the interventional as well as in the cardiologic field, focusing on <i>"what they need to see"</i> .	Werner Jaschke
9:30-10:00		Interventional Cardiology Procedures		Flavio Ribichini
10:00-10:30	Coffee break			
10:30-11:30	State of the Art of Angiographic Imaging	Angiographic Equipment An overview	The lecture will go through the state-of-the-art of the components, hardware and software, of equipment used in interventional rooms. Attention will be paid to the complexity of the automatic exposure control	Nicholas Marshall
11:30-12:30		CBCT	Principles of image acquisition and reconstruction of CBCT. Image Quality and Dosimetric performances. Quality Controls.	Nicoletta Paruccini
12:30-14:00	Lunch break			
14:00-14:30	Technology - General Electric	New trends in angiographic systems technology	Manufacturers will introduce the new developments in the field of angiographic systems to reduce and manage dose and to improve image quality	Lionel Desponds
14.30-15.00	Technology - Canon			Andreas Patz
15.00-15.30	Technology - Philips			Jan C. Jans
15.30-16.00	Technology - Siemens			Markus Lendl

**Thursday 4<sup>th</sup> July 2019**

	<b>Session</b>	<b>Title</b>	<b>Description</b>	<b>Lecturer</b>
16:00-16:30	Coffee break			
16:30-17:30	Quality Assurance	Radiation safety as part of the QA program: considering the new European Directive	<p>The lecture will explain how:</p> <ul style="list-style-type: none"> <li>to introduce the radiation safety aspects in the QA program for patients and staff in interventional radiology.</li> <li>to formulate the integration of the QC for the imaging system and the optimization of the protocols in the program.</li> <li>to identify the criteria for investigation of potential high dose values for patients and high occupational dose values for staff.</li> </ul>	Roberto Sanchez
17.30-18.00	Quality Control	QC protocol General guideline	How to establish and implement a QC protocol for interventional procedures	Nicoletta Paruccini
20:00-23:00	Social dinner - participants + lecturers			

**Friday 5<sup>th</sup> July 2019**

	<b>Session</b>	<b>Title</b>	<b>Description</b>	<b>Lecturer</b>
09:00-10:00	Quality Control	QC Protocol Image Quality	Image Quality evaluations: From physics principles to qualitative image quality criteria Test objects (aim, components, use, limitations), tools to evaluate test object images, data processing using different tools and interpretation of results, design a task specific test object	Nicholas Marshall
10:00-10:30	Coffee break			
10:30-11:00	Quality Control	QC Protocol Equipment Dosimetry	Dosimetry tests of the equipment based on international regulations	Nicoletta Paruccini
11:00-11:30	Patient Dose	Patient Dosimetry	This lecture will provide a review about calculation of patient dose for interventional procedures (skin dose calculation based on mathematical models using DICOM object information) and introduce real time patient dose monitoring strategies.	Annalisa Trianni
11:30-12:00		Unintended exposures in interventional radiology ESR activities	This lecture will introduce unintended and accidental exposures in interventional radiology and the guidelines to manage incidents involving patients	Werner Jaschke
12:00-12:30		Trigger levels and Follow up	This lecture will explain how and when establishing trigger levels and introduce the follow up strategies	Roberto Sanchez

Friday 5<sup>th</sup> July 2019

	Session	Title	Description	Lecturer
12:30-14:00	Lunch time			
14:00-14:30	Patient Dose	Reference Levels	An overview of Reference Levels for interventional radiology: What do they mean, why do we need and how to establish, including the indication for complexity factors	Roberto Sanchez
14:30-14:50	Optimization General Electric	Protocol optimization for angiographic equipment	How manufacturers optimize protocols for angiography equipment	Lionel Desponds
14:50-15:10	Optimization Canon			Andreas Patz
15:10-15:30	Optimization Philips			Jan C. Jans
15:30-15:50	Optimization Siemens			Markus Lendl
15:50-16:00	Discussion			
16:00-16:30	Coffee break			
16:30-18:00	Optimization	Round Table	Few basic protocols vs as specific as possible protocols, the way of assigning protocols, the role of the Medical Physicist in Protocol Optimization, the interaction between MPs, Radiologists, Radiographers and Manufacturers' specialist in the protocol settings.	EFOMP (Annalisa Trianni – Roberto M. Sanchez– A. Torresin) ESR (Werner Jaschke) COCIR

**Saturday 6th July 2019**

	<b>Session</b>	<b>Title</b>	<b>Description</b>	<b>Lecturer</b>
09:00-09:30	Patient Dose	Available Standards for Dose Tracking	Which standard objects for collection and storage of patient dose related data are available: un up-to-date review	Annalisa Trianni
9.30-10.30		Dose tracking systems for interventional procedures	This lecture will provide an overview of dose tracking systems developed by different vendors and their use in interventional radiology to manage protection of patients, optimization and dose estimation	Jenia Vassileva (IAEA)
10:30-11:00	Coffee break			
11:00-11:30	Staff Dosimetry	Radiation protection of the staff	This lecture will provide an overview of protocols, doses and classification adopted for the radiation protection of the staff and the management of pregnant staff in interventional rooms	Marco Brambilla
11:30-12:00		The role of active dosimeters	An overview of active personal dosimeters supplying real-time data on radiation dose rates and equivalent doses and their potential reducing operator exposure in interventional procedures	Filip Vanhavere
12.00-12.30		Status of Eye lens dosimetry	This lecture will review current approaches and opportunities in eye dosimetry with a particular reference to the new limit set by the Euratom 59/13	Filip Vanhavere
13:30-14:30	Final examination			

## Faculty

<b>Marco Brambilla</b>	Head Department of Medical Physics – University Hospital – Novara – Italy
<b>Lionel Desponds</b>	COCIR – Principal Engineer for Interventional X-ray Image Quality – GE Healthcare
<b>Jan C. Jans</b>	COCIR – IQ & Physics – Philips Healthcare
<b>Werner Jaschke</b>	ESR – Head Department of Radiology – University Hospital – Innsbruck – Austria
<b>Markus Lendl</b>	COCIR – Image Quality Angiography Systems – Siemens Healthineers
<b>Nicholas Marshall</b>	UZ Leuven – Leuven – Belgium
<b>Andreas Patz</b>	COCIR – International Clinical Development Manager (CardioVascular) - Canon Medical Systems Europe
<b>Nicoletta Parruccini</b>	Department of Medical Physics – San Gerardo Hospital – Monza – Italy
<b>Flavio Ribichini</b>	Head Department of Cardiovascular Disease – University Hospital – Verona – Italy
<b>Roberto Sanchez</b>	Department of Medical Physics – San Carlo Hospital – Madrid – Spain
<b>Alberto Torresin</b>	Head Department of Medical Physics – Hospital Niguarda – Milan – Italy
<b>Annalisa Trianni</b>	Department of Medical Physics – Udine University Hospital – Udine – Italy
<b>Jenia Vassileva</b>	Department of Nuclear Safety and Security – IAEA – Vienna – Austria
<b>Filip Vanhavere</b>	Deputy Director of Environment, Health and Safety Institute – SCK-CEN – Antwerp – Belgium

## Further Information

Course language	English
Level	MPE
Registration fee* (2 main meals, 5 coffee breaks, 1 social dinner)	300 € 350 € (from 31.05.2019)
Reduced registration fee* <ul style="list-style-type: none"> <li>• subsidized by EFOMP</li> <li>• first-come, first-served policy</li> <li>• deadline for application (15.06.2019)</li> </ul>	150 € - for the first 10 attendees (max. 2 from one country) coming from the following European countries: Albania, Belarus, Bosnia & Herzegovina, Bulgaria, Croatia, Cyprus, Estonia, Greece, Hungary, Kosovo, Latvia, Lithuania, FYR of Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Turkey, Ukraine.
Maximum number of participants	80
Duration	4 <sup>th</sup> July 2019 – 6 <sup>th</sup> July 2019
Study load	17 hours of lectures and demonstrations
Venue	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
GPS coordinates	50°5'27.737"N, 14°24'58.713"E
Accommodation	Individual
Information, programme at:	<a href="http://www.efomp.org">www.efomp.org</a>
Registration	Electronic registration via <a href="http://www.efomp.org">EFOMP website</a>
Registration period	2nd January 2019 – 15th June 2019

\* payment must be done in 14 days following the pre-registration, otherwise pre-registration will be cancelled and neither free place nor subsidized or ordinary fee can be granted for repeated registration

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