



Czech Association
of
Medical Physicists



EFOMP School for Medical Physics Experts Prague, Summer 2013

**Clinical Medical Device Management: Specification, Acceptance testing, Commissioning,
QC and Advanced applications in Whole-body PET/CT**

July 4 – July 6, 2013
Prague, Czech Republic

The Czech Association of Medical Physicists in collaboration with EFOMP and 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 **EFOMP School for Medical Physics Experts - Prague, Summer 2013**. The school will be aimed at advanced tasks related to PET/CT - from specification of PET/CT system properties to image reconstruction, fusion and evaluation. This two-and-half day event will be an EFOMP accredited one and is intended for practicing clinical Medical Physicists who want to become a Medical Physics Expert in Nuclear Medicine.

Content

Hardware and software update (State-of-the-art: hardware devices, Physical figures-of-merit for PET/CT devices: definition and measurements, State-of-the-art: reconstruction and acquisition software), **Site-Planning** (PET/CT site planning for a state-of-the-art scanner), **Radiation Protection** (Patient dose optimisation, Occupational dose minimization), **Selection and Commissioning of PET/CT scanners** (Comparing figures-of-merit and performance indicators of PET/CT scanners, Optimization of PET/CT acquisition protocols), **Acceptance and QC** (Acceptance testing of PET/CT, Demonstration of acceptance testing, Quality Control of PET/CT, Demonstration of quality control testing), **Advanced applications** (FDG PET/CT-based delineation of tumour volumes in radiotherapy planning, FDG-PET/CT software for image segmentation, State-of-the-art in Correlative Imaging: methods and software for PET image fusion with other imaging modalities, Standardization of 18F-FDG PET/CT for treatment response assessments), **Future developments** (PET/MRI imaging).

Organizers

Jaroslav Ptacek, Martin Steiner (Czech Republic)
Carmel Caruana, Marco Brambilla, Alberto Torresin, Peter Sharp, Stelios Christofides (EFOMP)

Teachers

Thomas Beyer Centre for Medical Physics and Biomedical Engineering, Medical University of Vienna, Austria
Nicola Belcari Department of Physics, University of Pisa, Italy



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Ronald Boellaard	Department of Nuclear Medicine and PET Research, VU University Medical Centre, Amsterdam, Netherlands
Marco Brambilla	Department of Medical Physics, University Hospital, Novara, Italy
Roberta Matheoud	Department of Medical Physics, University Hospital, Novara, Italy
Jaroslav Ptacek	Department of Medical Physics and Radiation Protection, Faculty Hospital Olomouc, Czech Republic
Bernhard Sattler	Department of Nuclear Medicine, University Hospital, Leipzig, Germany
Andreas Schaefer	Department of Nuclear Medicine, Saarland University Medical Centre, Homburg, Germany
Jiri Trnka	Department of Nuclear Medicine, First Faculty of Medicine, Charles University Prague and General University Hospital Prague

Course time table

4th July Thursday	Session	Title	Description	Lecturer
14:00-15:00	Hardware and software update	<i>Physics and technology of state of the art PET/CT scanners</i>	Decay, emission, photon detection, detectors, new technologies	<i>Belcari</i>
15:00-16:00		<i>Physical figures of merit of PET/CT data and image quality - definition and measurements</i>	NECR, HC-RC, noise, CNR, lesion detectability	<i>Belcari</i>
16:00-16:30			coffee break	
16:30-17:30		<i>Advanced imaging and reconstruction techniques</i>	FBP, iterative methods, TOF, PSF, dynamic and gated acquisitions	<i>Trnka</i>
17:30-18:30	Site Planning	<i>PET/CT site planning</i>	Physical and organizational provision for installation of a PET/CT scanner	<i>Brambilla</i>
5th July Friday	Session	Title	Description	Lecturer
8:00-9:00	Radiation protection	<i>Occupational radiation protection</i>	Update on occupational effective and equivalent doses	<i>Ptacek</i>
9:00-10:00	Selection of PET/CT scanners	<i>Comparing figures-of-merit and performance indicators of PET/CT scanners</i>	How to compare device performance indicators	<i>Beyer</i>
10:00-10:30			coffee break	
10:30-11:15	Commissioning of PET/CT scanners	<i>Optimization of PET/CT acquisition protocols</i>	Emission scan duration, injected activity, image reconstruction	<i>Boellaard</i>
11:15-12:00		<i>Clinical Optimization of PET/CT</i>	Adaptations of contrast	<i>Beyer</i>



12:00-13:00		<i>imaging</i> Standardization of 18F-FDG PET/CT for treatment response assessments	administration, patient positioning, patient handling, breathing protocols, positioning the arms The need for standardization in relation to the specific use of SUVs and SUV changes in studies of treatment response assessments	Boellaard
13:00-14:00			lunch time	
14:00-15:00	Acceptance and QC	Acceptance testing of PET/CT	Guidelines, experiences and requirements	Brambilla
15:00-16:00		Demonstration of acceptance testing	Practical demonstration	Matheoud
16:00-16:30			coffee break	
16:30-17:30		Quality controls of PET/CT	Guidelines, experiences and requirements	Brambilla
17:30-18:30		Demonstration of quality control testing	Practical demonstration	Matheoud
6th July Saturday	Session	Title	Description	Lecturer
8:00-9:00	Radiation protection	Patient dose optimization	Effective dose and equivalent doses from PET and CT	Ptacek
9:00-10:00	Advanced applications	FDG-PET/CT-based delineation of tumor volumes in radiotherapy planning	Methods for semi-automatic delineation of FDG-PET/CT tumour volumes	Schaefer
10:00-10:30			coffee break	
10:30-11:30		FDG-PET/CT softwares for image segmentation	Practical demonstration	Schaefer
11:30-12:30		Correlative imaging: methods and software for PET/CT image fusion with other imaging modalities	Multimodality image registration with software: state-of-the-art	Boellaard
12:30-13:30			lunch time	
13:30-15:00	Future developments	PET/MRI imaging	The Implementation of a simultaneous hybrid PET/MR-imaging system in an integrated research and clinical setting	Sattler
15:00-15:30			coffee break	
15:30-16:30			exam (optional, MCQs)	

EFOMP Bursary

The purpose of this award is to make it possible for a nuclear medicine medical physicist from Eastern Europe who is not yet recognized as a medical physics expert to participate in the EFOMP School for Medical Physics Experts to be held in Prague summer 2013. The applicants must have recently achieved the level of a Qualified Medical Physicist and must have been involved in medical physics activities in either a hospital, university or research



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institute for a period of at least two years prior to the start of the school. The value of the award will be the registration fee to attend the conference. Travel and subsistence costs are the responsibility of the applicant and cannot be funded by EFOMP.

Applicants are to send a two page CV by email to:

- Carmel Caruana (carmel.j.caruana@um.edu.mt)
- Marco Brambilla (marco.brambilla@maggioreosp.novara.it).

Please put 'Application for EFOMP bursary for Prague 2013' in the email header.

Applicants must be members of a National Member Organization of EFOMP. Deadline for applications is 21st March 2013.

Further information

Course language	English
Course capacity	50 participants
Level	MPE
Fee	250 € (early registration 2 Jan – 7 Apr 2013) 300 € (late registration 8 Apr – 20 Jun 2013) 5 coffee breaks and 2 main meals included
CAMP bank account	IBAN: CZ22 0300 0000 0001 9078 9865 BIC: CEKOCZPP Account Name: CESKA SPOLECNOST FYZ Bank address: CSOB a.s. Na Morani 360/3 120 00 Prague 2 Czech Republic

Please, provide us with the variable symbol received after registration. You can state it in a „payment purpose“ comment.

Duration	4 Jul 2013 – 6 Jul 2013
Study workload	16 hours of lectures, 2 hours of practical demonstration
Venue	Dept. 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°5'27.723"N, 14°24'58.801"E
Accommodation	Individual
Registration	Electronic registration via www.csfm.cz/Summer2013.html
Registration period	2 Jan 2013 – 20 Jun 2013

For all practical information, including accommodation and public transport in Prague, please contact Czech part of organizing committee: summer2013@csfm.cz.



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