



Czech Association
of
Medical Physicists



EFOMP



EFOMP School for Medical Physics Experts – Prague 2015

Digital mammography and quality controls

January 29 – 31, 2015
Prague, Czech Republic

The Czech Association of Medical Physicists in collaboration with EFOMP 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 **EFOMP Winter School of Medical Physics 2015**. The school will be aimed at advanced tasks connected with digital mammography and quality controls. This two-and-half day event will be accredited by EFOMP, and addressed to medical physicists who are already or working to become Medical Physics Experts (MPE) in Diagnostic Radiology. As in the past summer schools, there will be an optional final exam for those seeking a higher level of certification beyond the school attendance.

Contents

Digital Mammography Overview – General overview on current clinical challenges in breast imaging (screening and diagnostic), physics and technology of 2D digital mammography, CR mammography, physical characterization of 2D digital systems.

Image Quality and Quality Control – Image quality with phantoms compared to clinical image quality. Assessing image quality by phantoms, and optimization strategies. Quality controls, acceptance/commissioning and reproducibility tests. Presentation of the EFOMP protocol on quality controls in digital mammography.

Practical Sessions – Physical characterization demo, hands-on activities on the EFOMP protocol (X-ray source, automatic exposure control, and detector tests), experiment to illustrate difference between image quality human- and computer-based.

New applications of digital mammography - State of the art and clinical challenges in breast tomosynthesis, breast CT, and contrast mammography. Recommendations for QC tests.



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Organizers

Jaroslav Ptacek, Tereza Hanusova (Czech Republic)

**Gisella Gennaro, Alberto Torresin, Marco Brambilla, Günter Hartmann,
Peter Sharp** (EFOMP)

Teachers

Gisella Gennaro	Department of Radiology, Veneto Institute of Oncology (IRCCS), Padua, Italy
R. Edward Hendrick	Department of Radiology, School of Medicine, University of Colorado-Denver, Aurora, Colorado, USA
Nicholas Marshall	Department of Radiology, UZ Gasthuisberg, Leuven, Belgium
Ana Pascoal	King's College Hospital NHS Foundation Trust, London, United Kingdom
Friedrich Semturs	RefZQS (Reference Center for technical quality control in the Austrian Mammography Screening Project) at AGES (Austrian Agency for Health and Food Safety)
Martin Yaffe	Sunnybrook Research Institute, Toronto, Canada



School schedule

Jan 29th Thursday	Session	Title	Description	Lecturer
10:00-14:00		Registration/Welcome		
14:00-15:00	Digital mammography overview	Current clinical challenges in breast imaging	Screening efficacy, breast imaging modalities and current guidelines.	Hendrick
15:00-16:00		Physics and technology of 2D mammography	Digital mammography equipment: X-ray sources, automatic exposure controls, image detectors	Yaffe
16:00-16:30		coffee break		
16:30-17:00		CR mammography	Differences between CR and DR mammography and impact on clinical use and quality control	Pascoal
17:00-17:45		Characterization of digital mammography systems	Application of linear, stationary system theory to mammography imaging	Marshall
17:45-18:30		Practical session	Demonstration of characterization of digital mammography systems	Marshall



Jan 30th Friday	Session	Title	Description	Lecturer
8:30-9:15	Image quality and quality control	<i>Image quality in digital mammography</i>	Concept of image quality for physicists (technical IQ) and for radiologists (clinical IQ)	Gennaro
9:15-10:00		<i>Image quality assessment using phantoms/test objects</i>	Description of phantoms and test objects for mammography: potentials and limitations	Pascoal
10:00-10:30		<i>Reviewing digital mammograms</i>	Display devices and software requirements, potential issues from image inconsistencies	Yaffe
10:30-11:00			coffee break	
11:00-12:00	Practical session	<i>Quality controls in digital mammography: general aspects of digital QC and the new American College of Radiology approach</i>	Acceptance/commissioning testing: purpose, types, examples	Hendrick
12:00-13:00		<i>Optimization of image quality in digital mammography</i>	Review purpose of optimization and optimization strategies	Yaffe
13:00-14:30			Lunch	
14:30-15:30	Practical session	<i>Quality controls: the EFOMP proposal</i>	Presentation of the EFOMP protocol and recommendations	Gennaro
15:30-16:30		<i>X-ray and AEC tests: procedure description and practice</i>	Description of the procedures in the EFOMP document for testing X-ray source and automatic exposure control	Semturs
16:30-17:00			coffee break	
17:00-18:00	Practical session	<i>Detector tests: procedure description and practice</i>	Description of the procedures in the EFOMP document for testing the image detector	Pascoal
18:00-19:00		<i>Image quality assessment: an inter-reader variability</i>	School participants will to score phantom images. Results will be analyzed to	Gennaro



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		<i>experiment</i>	verify inter-reader variability, and compared with those obtained by automatic software	
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Jan 31st Saturday	Session	Title	Description	Lecturer
8:30-9:30	Quality control experience	Acceptance/commissioning tests: experience from the Austrian screening	Description of results from the acceptance tests performed within the Austrian national screening started in 2014	Semturs
9:30-10:30		Reproducibility tests: experience from a regional screening	Description of results from the reproducibility tests performed within a regional Italian screening (2013-2014)	Gennaro
10:30-11:00			coffee break	
11:00-12:00	New applications of digital mammography	New technologies and advanced applications in digital mammography: current status and future perspectives	Breast tomosynthesis, breast CT, contrast mammography, etc.	Hendrick
12:00-13:00		QC testing in tomosynthesis and contrast mammography	Proposals of what should be recommended to test with new applications of digital mammography	Yaffe
13:00-14:30			Lunch	
14:30-15:30	Conclusion	Summary and feedback from participants	School take home messages and feedback from participants	
15:30-16:30			Final exam	



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Further information

Course language	English
Level	MP to MPE
Registration fee	300 € 2 lunches, 4 coffee breaks included
Reduced registration fee - subsidized by EFOMP and CAMP - first-come, first-served policy	150 € - for the first 20 attendees (max. 4 from one country) coming from the following EFOMP NMO countries: Albania, Bulgaria, Croatia, Cyprus, Estonia, Greece, Hungary, Latvia, Lithuania, Macedonia, Moldova, Romania, Russia, Serbia, Slovakia, Slovenia, Turkey, Ukraine
Late registration fee - registration after 28 Dec 2014	350 €
Maximum number of participants	50
Duration	Jan 29, 2015 – Jan 31, 2015 Jan 30 evening – social dinner
Study load	16 hours of lectures and 4 hours of hands-on activities
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 (possible via accommodation agency)
Information, program, etc.	http://www.csfm.cz/winter2015.html
Registration	Electronic registration via http://www.csfm.cz/winter2015.html
Registration period	Aug 1, 2014 – Jan 15, 2015
