The Abdus Salam International Centre for Theoretical Physics

College on Medical Physics (co-sponsored by ICTP and KFAS)

Organizer(s): Directors: A. Benini, G.D. Frey, F. Milano, S. Tabakov. Director Emeritus: P. Sprawls. Local Organizer: L. Bertocchi
Trieste - Italy, 01 - 19 September 2008

Final programme

Monday, 1 September (Room:Leonardo da Vinci Building Main Lecture Hall)

1 September 2008

08:30 - 09:45	**Registration and Administrative Formalities**
09:45 - 10:30	**Opening Session - Organizers**
10:30 - 11:00	--- Coffee Break ---
11:00 - 11:45	**Perry SPRAWLS** / *Emory University, USA* **Medical image characteristics and quality factors** Reference: http://www.sprawls.org/resources/IMGCHAR/
11:45 - 12:30	**Perry SPRAWLS** **Radiation quantities and units** Reference: http://www.sprawls.org/resources/RADQU/
12:30 - 14:00	--- Lunch Break ---
14:00 - 14:45	**Anna BENINI** / *Copenhagen University Hospital, Denmark* **Principles of radiation protection in diagnostic radiology**
14:45 - 15:15	--- Coffee Break ---
15:15 - 16:00	**Anna BENINI** **Radiation protection and biological effect**

Tuesday, 2 September

2 September 2008

09:00 - 09:45	**Perry SPRAWLS** **Characteristics of radiation for imaging** Reference: http://www.sprawls.org/resources/RADCHAR/
09:45 - 10:30	**Perry SPRAWLS** **Interactions of radiation with tissues and other materials** Reference: http://www.sprawls.org/resources/INTERACT/
10:30 - 11:00	--- Coffee Break ---
11:00 - 11:45	**Slavik TABAKOV** / *Kings College London, UK* **X-ray tubes and generators 1**
11:45 - 12:30	**Slavik TABAKOV** **X-ray tubes and generators 2**
12:30 - 14:00	--- Lunch Break ---
14:00 - 14:45	**Anna BENINI** **International system of radiation protection and regulatory requirements**
14:45 - 15:15	--- Coffee Break ---
15:15 - 16:00	**Anna BENINI** **Medical exposures, UN basic safety standard**

Wednesday, 3 September

3 September 2008

09:00 - 09:45	**Perry SPRAWLS** **X-ray image formation and contrast optimization** Reference: http://www.sprawls.org/resources/XRAYCON/ Reference: http://www.sprawls.org/resources/MAMMO/
09:45 - 10:30	**Perry SPRAWLS** **Image blurring, visibility of detail and resolution** Reference: http://www.sprawls.org/resources/BLUR/
10:30 - 11:00	--- Coffee Break ---
11:00 - 11:45	**Slavik TABAKOV** **Radiographic density control**
11:45 - 12:30	**Slavik TABAKOV** **Evaluating generator performance**
12:30 - 14:00	--- Lunch Break ---
14:00 - 14:45	**Anna BENINI** **Inspections, design and shielding in diagnostic radiology**

14:45 - 15:15 --- Coffee Break ---

15:15 - 16:00 **Anna BENINI**
Safety of sources and design of shielding facilities

18:30 - 20:30 --- Reception - Adriatico Guest House Terrace ---

Thursday, 4 September

4 September 2008

09:00 - 09:45 **Perry SPRAWLS**
Digital image characteristics
Reference: http://www.sprawls.org/resources/DICHAR/

09:45 - 10:30 **Perry SPRAWLS**
Radiographic receptor characteristics
Reference: http://www.sprawls.org/resources/FILMSCR/ Reference: http://www.sprawls.org/resources/DIGRAD/

10:30 - 11:00 --- Coffee Break ---

11:00 - 11:45 **Slavik TABAKOV**
Fluoroscopic imaging systems

11:45 - 12:30 **Slavik TABAKOV**
Fluoroscopic image quality

12:30 - 14:00 --- Lunch Break ---

14:00 - 14:45 **Slavik TABAKOV**
Computer Session - Informatics Lab (contrast/detail)

14:45 - 15:15 --- Coffee Break ---

15:15 - 16:00 **Slavik TABAKOV**
Computer Session - Informatics Lab (contrast/detail)

Friday, 5 September

5 September 2008

09:00 - 09:45 **Perry SPRAWLS**
Radiographic system detail
Reference://http://www.sprawls.org/resources/RADDETAIL/

09:45 - 10:30 **Perry SPRAWLS**
Medical image visual noise
Reference: http://www.sprawls.org/resources/NOISE/

10:30 - 11:00 --- Coffee Break ---

11:00 - 11:45 **Paola BREGANT** / *Ospedale Maggiore, Trieste*
Film processing and QC

11:45 - 12:30 **Slavik TABAKOV**
Organization of acceptance testing of x-ray equipment

12:30 - 14:00 --- Lunch Break ---

14:00 - 14:45 **Slavik TABAKOV**
Computer Session - Informatics Lab (QA protocols)

14:45 - 15:15 --- Coffee Break ---

15:15 - 16:00 **Slavik TABAKOV**
Computer Session - Informatics Lab (QA protocols)

Monday, 8 September 2008

8 September 2008

09:00 - 09:45 **Cornelius (Neil) LEWIS** / *King's College, London, UK*
Medical exposure directives

09:45 - 10:30 **Neil LEWIS**
Implementation of radiation protection programmes

10:30 - 11:00 --- Coffee Break ---

11:00 - 11:45 **Slavik TABAKOV**
Computed tomography (CT) image formation

11:45 - 12:30 **Anna BENINI**
Principles of individual monitoring, including emergency and local rules

12:30 - 14:00 --- Lunch Break ---

14:00 - 14:45 **Anna BENINI**
Occupational exposure control: organization, responsibilities and training

14:45 - 15:15 --- Coffee Break ---

15:15 - 16:00 **Anna BENINI**
Individual monitoring and exposure assessment

16:00 - 17:00 **Neil LEWIS**
Computer Session - Informatics Lab - Radiation shielding calculations

Tuesday, 9 September

9 September 2008

09:00 - 09:45 **Neil LEWIS**
Radiation protection audit

09:45 - 10:30 **Perry SPRAWLS**
Scattered radiation and image contrast
Reference: http://www.sprawls.org/resources/SCATRAD/

10:30 - 11:00 --- Coffee Break ---

11:00 - 11:45 **Anna BENINI**
Patient radiation protection - Part 1: Definitions, principles, guidance levels and reference levels

11:45 - 12:30 **Anna BENINI**
Patient radiation protection - Part 1: practical rules, procedures

12:30 - 14:00 --- Lunch Break ---

14:00 - 14:45 **Anna BENINI**
Practical Session at Trieste Hospital (or) Practical Presentations at ICTP

14:45 - 15:15 --- Coffee Break ---

Wednesday, 10 September

10 September 2008

09:00 - 09:45 **Perry SPRAWLS**
Physics of ultrasound
Reference: http://www.sprawls.org/resources/USPRO/

09:45 - 10:30 **Perry SPRAWLS**
Ultrasound imaging
Reference: http://www.sprawls.org/resources/USIMG/ Reference: http://www.sprawls.org/resources/USVAS/

10:30 - 11:00 --- Coffee Break ---

11:00 - 11:45 **Slavik TABAKOV**
Basics of CR - Computed radiography 1

11:45 - 12:30 **Slavik TABAKOV**
Basics of CR - Computed radiography 2 and PACS

12:30 - 14:00 --- Lunch Break ---

14:00 - 14:45 **Franco MILANO** / *University of Florence, Italy*
Basis of mammography

14:45 - 15:15 --- Coffee Break ---

15:15 - 16:00 **Franco MILANO**
Mammography QC

Thursday, 11 September

11 September 2008

09:00 - 09:45 **Perry SPRAWLS**
CT image quality optimization and dose management
Reference: http://www.sprawls.org/resources/CTIMG/ Reference: http://www.sprawls.org/resources/CTIQ/

09:45 - 10:30 **Perry SPRAWLS**
Optimizing the radiographic systems

10:30 - 11:00	--- Coffee Break and Group Photograph ---
11:00 - 11:45	**Mario DE DENARO** / *Ospedale Maggiore, Trieste* **Computed tomography QC1**
11:45 - 12:30	**Mario DE DENARO** **Computed tomography QC2**
12:30 - 14:00	--- Lunch Break ---
14:00 - 14:45	**Franco MILANO** **Measurement of radioactivity, calibrations and counting statistics**
14:45 - 15:15	--- Coffee Break ---
15:15 - 16:00	**Franco MILANO** **Radiation measurement calibrations**
16:00 - 16:45	**Anna BENINI** **Radiation protection in interventional radiology/cardiology: Part 1**

Friday, 12 September

12 September 2008

09:00 - 09:45	**Franco MILANO** **Digital mammography**
09:45 - 10:30	**Perry SPRAWLS** **Digital image processing** Reference: http://www.sprawls.org/resources/DIGPROCESS/
10:30 - 11:00	--- Coffee Break ---
11:00 - 11:45	**Perry SPRAWLS** **Evolving models of medical physics education**
11:45 - 12:30	**Slavik TABAKOV** **Medical physics e-Learning**
12:30 - 14:00	--- Lunch Break ---
14:00 - 14:45	**All** **Feedback and discussion of posters**
14:45 - 15:15	--- Coffee Break ---
15:15 - 16:00	**All** **Feedback and discussion of posters**

Monday, 15 September

15 September 2008

09:00 - 09:45	**Perry SPRAWLS** **Magnetic resonance image characteristics (Reference: Magnetic Resonance Imaging: Principles, Methods and Techniques. Ch. 1)** Reference: http://www.sprawls.org/resources/MRICHAR/
09:45 - 10:30	**Perry SPRAWLS** **Magnetic resonance imaging systems (Reference: Magnetic Resonance Imaging: Principles, Methods and Techniques. Ch. 2)** Reference: http://www.sprawls.org/resources/MRISYS/
10:30 - 11:00	--- Coffee Break ---
11:00 - 11:45	**George FREY** / *Medical University of South Carolina, Charleston, USA* **Characteristics of radionuclides for imaging**
11:45 - 12:30	**George FREY** **Radiation detectors and measurement**
12:30 - 14:00	--- Lunch Break ---
14:00 - 14:45	**Franco MILANO** **MR safety and calculation of shielding**
14:45 - 15:15	--- Coffee Break ---
15:15 - 16:00	**Franco MILANO** **Quantitative use of imaging data**
16:00 - 17:00	**Franco MILANO** **COMPUTER SESSION lab MRI simulation**

Tuesday, 16 September

16 September 2008

09:00 - 09:45	**Perry SPRAWLS** **Nuclear magnetic resonance (Reference: Magnetic Resonance Imaging: Principles, Methods and Techniques. Ch. 3)** Reference: http://www.sprawls.org/resources/MRINMR/
09:45 - 10:30	**Perry SPRAWLS** **Tissue magnetization and relaxation (Reference: Magnetic Resonance Imaging: Principles, Methods and Techniques. Ch. 4)** Reference: http://www.sprawls.org/resources/MRITISSUE/
10:30 - 11:00	--- Coffee Break ---
11:00 - 11:45	**George FREY** **Gamma camera function and imaging**
11:45 - 12:30	**George FREY** **Gamma camera image quality characteristics**
12:30 - 14:00	--- Lunch Break ---
14:00 - 14:45	**Practical Presentation at Trieste Hospital (or) Practical Presentations at ICTP**

Wednesday, 17 September

17 September 2008

09:00 - 09:45	**Perry SPRAWLS** **The MR imaging process (Reference: Magnetic Resonance Imaging: Principles, Methods and Techniques. Ch. 5)** http://www.sprawls.org/resources/MRIPROC/
09:45 - 10:30	**Perry SPRAWLS** **Spin echo imaging methods (Reference: Magnetic Resonance Imaging: Principles, Methods and Techniques. Ch. 6)** http://www.sprawls.org/resources/MRISE/
10:30 - 11:00	--- Coffee Break ---
11:00 - 11:45	**George FREY** **Evaluating gamma camera performance and quality control**
11:45 - 12:30	**George FREY** **Radionuclide dose considerations**
12:30 - 14:00	--- Lunch Break ---
14:00 - 14:45	**Anna BENINI** **Radiation exposure in pregnancy**
14:45 - 15:15	--- Coffee Break ---
15:15 - 16:00	**Anna BENINI** **TBA**
16:00 - 17:00	**George FREY** **COMPUTER SESSION lab teaching EXCEL simulations**

Thursday, 18 September

18 September 2008

09:00 - 09:45	**Perry SPRAWLS** **Gradient echo imaging methods (Reference: Magnetic Resonance Imaging: Principles, Methods and Techniques. Ch. 6)** http://www.sprawls.org/resources/MRIGE/
09:45 - 10:30	**Perry SPRAWLS** **Selective signal suppression (Reference: Magnetic Resonance Imaging: Principles, Methods and Techniques. Ch. 8)** http://www.sprawls.org/resources/MRISIGSUP/
10:30 - 11:00	--- Coffee Break ---
11:00 - 11:45	**George FREY** **Radionuclide imaging**
11:45 - 12:30	**George FREY** **Nuclear medicine imaging procedures**

12:30 - 14:00 --- Lunch Break ---

14:00 - 14:45 **George FREY**
Radionuclide tomographic imaging (SPECT)

14:45 - 15:15 --- Coffee Break ---

15:15 - 16:00 **George FREY**
Radionuclide tomographic imaging (PET)

16:00 - 16:45 **Anna BENINI**
Radiation protection in interventional radiology/cardiology: Part 2

Friday, 19 September

19 September 2008

09:00 - 09:45 **Perry SPRAWLS**
Spatial characteristics of the MR image (Reference: Magnetic Resonance Imaging: Principles, Methods and Techniques. Ch. 9)
http://www.sprawls.org/resources/MRISPACE/

09:45 - 10:30 **Perry SPRAWLS**
MR image detail and noise (Reference: Magnetic Resonance Imaging: Principles, Methods and Techniques. Ch. 10)
http://www.sprawls.org/resources/MRIDN/

10:30 - 11:00 --- Coffee Break ---

11:00 - 11:45 **Anna BENINI**
Elements of radiation protection in nuclear medicine. Part 1

11:45 - 12:30 **Anna BENINI**
Elements of radiation protection in nuclear medicine. Part 2

12:30 - 14:00 --- Lunch Break ---

14:00 - 14:45 **Anna BENINI**
Organization of radiation protection in NM

14:45 - 15:15 --- Coffee Break ---

15:15 - 16:00 **All**
Concluding Session