



# International Symposium on Advances in Diagnostic Imaging Physics

Algiers 4 – 7 May 2008



**The Nuclear Research Center of Algiers (CRNA)**

**The American Association of Physicists in Medicine (AAPM)  
International Scientific Exchange Programs (ISEP)**

**In Collaboration with**

**The University Hospital Lamine Debbaghine (CHU-Bab-Oued)**

**The Pierre and Marie Curie Centre (CPMC)**

**The Houari Boumediene Science and Technology University (USTHB)**

**The National Institute of Public Health (INSP)**

**International Symposium on  
Advances in Diagnostic Imaging Physics**

**May 4 – 7, 2008**

**Algiers, ALGERIA**

**Program Outline**

**Host Director:**

**Dr. Abdelhamid Mellah, Ph.D,  
Director General  
Nuclear Research Centre of Algiers  
2, Bd. Frantz Fanon  
B.P. 399 Alger RP  
Algiers 16000 - Algeria**

**Course Director:**

**Dr. Adel Mustafa, Ph.D., FAAPM  
Asst. Professor and Director of  
Medical Physics  
Department of Radiology  
St. Vincent's Manhattan  
New York Medical College  
New York, USA**

**Local Organizing Committee:**

**Dr. Abdelhamid Mellah, Chairman  
Dr. Zohra Mokrani-Lounis  
Mr. Mehenna Arib  
Mr. Abdelkader Toutaoui  
Mrs. Nadia Toutaoui-Khelassi  
Mr. Abdelwahab Badreddine  
Mr. Abdesselam Brihmat  
Dr. Akila Frahi-Amroun**

**AAPM Invited Speakers**

**Dr. John Boone, Ph.D., FAAPM**

Professor, Department of Radiology  
University of California at Davis Medical  
Center  
Sacramento, California, USA

**Dr. Mahadevapaa Mahesh, Ph.D., FAAPM**

Chairman of ISEP  
Asst. Professor, Department of Radiology  
Johns Hopkins University  
Baltimore, Maryland, USA

**Dr. Adel Mustafa, Ph.D., FAAPM**

Asst. Professor, Department of Radiology  
St. Vincent's Manhattan  
New York Medical College  
New York, New York, USA

**Dr. J. Anthony Seibert, Ph.D., FAAPM**

Professor, Department of Radiology  
University of California at Davis Medical  
Center  
Sacramento, California, USA

**Dr. Habib Zaidi, Ph.D, PD**

Head of PET Instrumentation & Neuroimaging  
Laboratory (PINLab)  
Geneva University Hospital  
Division of Nuclear Medicine  
Geneva, Switzerland  
Visiting Professor, Cergy-Pontoise University,  
France

**Local Speakers**

**Pr. Boudjema Mansouri, Professor**

Head of Radiology Department  
C.H.U. Bab-El-Oued

**Pr. M'hamed Afiane, Professor**

Head of Radiotherapy Department  
Centre Pierre et Marie Curie  
Place du 1er mai - Alger - Algérie

**Mehenna Arib, MS**

Senior Physicist  
Head of Secondary Standard Dosimetry  
Laboratory Officer  
Nuclear Research Centre of Algiers

**Abdelkader Toutaoui, MS**

Medical Physicist  
Nuclear Research Centre of Algiers

**Rachida Drahmoune, MD**

Nuclear Medicine Service,  
C.H.U. Bab-El-Oued

**Nacéra Benamrane, Ph.D**

University of Science and Technology  
"Mohamed Boudiaf" Oran - Algérie

**Abdessalam Brihmat, MS**

Medical Physicist  
Nuclear Medicine Service  
C.H.U. Ibn Badis Constantine

**Said Kenida, MS**

Medical Physicist  
Nuclear Medicine Service  
C.H.U. Ibn Badis Constantine

## **Program Topics**

### **Introduction to Imaging:**

Introduction to Image formation in diagnostic radiology: An Overview  
Introduction to Image quality characteristics

### **MRI**

Magnetic resonance imaging: MR phenomena, image formation, pulse sequences  
Magnetic resonance imaging: image characteristics, artifacts and safety

### **CT**

CT Principles: Conventional to Multislice: system design, evolution, image reconstruction, and new trends  
Patient exposure in x-ray CT

### **Digital Radiography**

Basic concepts in digital imaging  
Digital Radiography: computed radiography, new digital receivers, DSA, image Processing techniques  
Computers in diagnostic radiology and Picture Archiving and Communication Systems (PACS)

### **Mammography**

Principles, Advances in Physics of mammography

### **Interventional**

Fluoroscopy in cardiovascular and interventional radiology; advances in fluoroscopy image receptors  
Practical aspect of fluoroscopy/interventional dose management

### **QA in Diagnostic Radiology**

Quality assurance in Radiology  
Quality assurance in general radiology and CT  
Quality assurance in interventional and cardiac fluoroscopy

### **Radiation Dose Management in Diagnostic Radiology**

Risk-benefit analysis in diagnostic radiology and Hospital Radiation Safety Program  
Methods of exposure reduction in conventional diagnostic radiology and CT  
Methods of exposure reduction in interventional fluoroscopy

### **Nuclear Medicine imaging**

Nuclear Medicine: conventional imaging basic principles  
Nuclear medicine: SPECT imaging

### **PET**

Physics of PET: Basic principles, image acquisition and processing  
Hybrid systems (PET/CT) technical aspects and image fusion  
Quantitation in PET

### **Quality assurance in Nuclear Medicine**

Quality assurance in Nuclear Medicine (planar and SPECT systems)  
Performance characteristics of PET (NEMA protocols)

### **Dose Management in Nuclear medicine**

Radiation safety in Nuclear Medicine with special emphasis on cyclotron/PET  
Hospital radioactive waste management  
Diagnostic reference levels for Nuclear Medicine  
Regulations on Radiation Protection in Hospitals in Algeria  
Radiation Dose assessment in nuclear medicine

### **Medical Physics Education: medical physicists, radiology residents, radiological technologist**

### **Imaging for Radiotherapy**

The role of nuclear medicine in radiation therapy treatment planning  
The role of CT and MRI in radiation therapy treatment planning

**Local Faculty Contributions**

**Contribution of medical imaging to the cancer treatment: Particular case of radiotherapy** "Apport de l'Imagerie Médicale au traitement du cancer : Cas particulier de la radiothérapie"

**Medical Imaging in Algeria : present status and outlooks** "Imagerie Médicale en Algérie : Etat de la situation et perspectives"

**Medical physics in Algeria: Present status and future developments** "Physique Médicale : Situation Actuelle et développements futures"

**Contribution of the Algerian Secondary Standard Dosimetry Laboratory to the regional development of medical applications** "Apport du Laboratoire Secondaire d'Etalons en Dosimétrie Algérien au développement régional des applications médicales"

**The regulation and radiation protection in a nuclear medicine department** "La réglementation et la radioprotection dans un service de médecine nucléaire"

**Contribution of pattern recognition, artificial intelligence and computer vision to medical imaging** "Apport de la reconnaissance des formes, de l'intelligence artificielle et de la vision en imagerie médicale"

**Present clinical applications of nuclear medicine in Algeria** "Applications cliniques actuelles de la médecine nucléaire en Algérie"

**Radiation Dose assessment in nuclear medicine** "Calcul des doses en médecine nucléaire"

**Quality Assurance in Planar and SPECT nuclear medicine imaging** "Assurance qualité en imagerie nucléaire planaire et tomographique"

## **SCIENTIFIC PROGRAM**

**Sunday, May 4<sup>th</sup>, 2008**

08:00 - 08:30 **Registration**

08:30 - 09:15 **Inauguration**

**09:15 – 09:30 Refreshments and Photo Opportunity**



09:30 – 10:00 Medical Imaging in Algeria, present status and outlooks

**Boudjema Mansouri**

10:00 – 10:40 Introduction to Image formation in diagnostic radiology: An Overview

**Mahadevappa Mahesh**

10:40 – 11:30 Introduction to Image Quality Characteristics

**Adel Mustafa**

11:30 – 12:00 Medical Physics in Algeria, present status and future developments

**Abdelkader Toutaoui**

12:00 – 12:40 Nuclear Medicine: Current trends: An overview

**Habib Zaidi**

**12:40 – 14:00**



**Lunch Break**

14:00 – 14:40 The physics of mammography; principles, advances

**Adel Mustafa**

14:40 – 15:20 Nuclear Medicine: SPECT Imaging

**Habib Zaidi**

15:20 – 16:00 Fluoroscopy in cardiovascular and interventional radiology; advances in image receptors. **Mahadevappa Mahesh**

16:00 – 16:30 Clinical applications of nuclear medicine in Algeria

**Rachida Drahmoune**

16:30 – 17:00 Regulations and radiation protection in nuclear medicine in Algeria

**Abdessalam Brihmat**

**Monday, May 5th, 2008**

8:30 – 9:15 CT Principles: Conventional to Multidetector  
**Mahadevappa Mahesh**

9:15 – 9:45 Cone Beam CT  
**John Boone**

9:45 – 10:30 The physics of PET imaging  
**Habib Zaidi**

**10:30 – 11:00 Refreshments Break**



11:00 - 11:45 Basic concepts in digital imaging  
**John Boone**

11:45 – 12:45 Digital Radiography: computed radiography, new digital receivers, DSA, image Processing techniques  
**Anthony Seibert**

**12:45 – 14:00**



**Lunch Break**

14:00 - 14:30 Digital mammography  
**Mahadevappa Mahesh**

14:30 – 15:30 Computers in diagnostic radiology and picture archiving and communication systems  
**Anthony Seibert**

15:30 - 18:30 Faculty visit to a Hospital Based Radiology Department

**Tuesday, May 6th, 2008**

8:30 - 9:30 Magnetic Resonance Imaging: Part 1  
**Anthony Seibert**

9:30- 10:00 Hybrid PET/CT systems  
**Habib Zaidi**

10:00 - 10:30 Contribution of pattern recognition, artificial intelligence and computer vision to medical imaging  
**Nacera Benamrane**

**10:30 - 11:00 Refreshments Break**



11:00 - 12:00 Magnetic Resonance Imaging: Part 2  
**Anthony Seibert**

12:00 – 12:30 Patient Dose in X-ray CT  
**Adel Mustafa**

12:30 – 13:00 Contribution of the Algerian Secondary Standard Dosimetry Laboratory to the regional development of medical applications.  
**Mehenna Arib**

**13:00 - 14:15**



Lunch Break

14:15 - 15:00 Risk benefit analysis in diagnostic radiology  
**Adel Mustafa**

15:00 - 15:30 Radiation dose management in conventional radiology and in CT  
**Mahadevapa Mahesh**

15:30 – 16:00 Radiation Dose assessment in nuclear medicine  
**Abdessalam Brihmat**

**16:00 - 19:00 Visit to the Regional Secondary Standard Laboratory**

**Wednesday, May 7th, 2008**

8:30 – 9:00 Radiation Dose management in interventional radiology  
**John Boone**

9:00 – 9:30 Contribution of medical imaging to radiation therapy  
**Mohamed Afiane**

9:30 – 10:00 The role of CT and MRI in radiation therapy treatment planning  
**Anthony Seibert**

10:00 – 10:30 The role of nuclear medicine in radiation therapy treatment planning  
**Habib Zaidi**

**10:30 - 10:50 Refreshments Break**



10:50 – 11:20 Quality Assurance in Diagnostic Radiology  
**Anthony Seibert**

11:20- 11:50 Quality Assurance in Computed Tomography  
**Adel Mustafa**

11:50 – 12:20 Quality Assurance in Fluoroscopy and interventional radiology  
**John Boone**

**12:20 - 13:40**



**Lunch Break**

13:45 – 14:15 Quality Assurance in Planar and SPECT nuclear medicine imaging  
**Said Kenida**

14:15 – 15:00 Medical physics education; the medical physicist, radiology residents and radiological technologists,  
**Anthony Seibert**

15:00 – 15:30 Performance characteristic of PET Imaging systems  
**Habib Zaidi**

15:30 - 16:30 Panel Discussion  
**Local Faculty and Habib Zaidi, Anthony Seibert, Adel Mustafa, John Boone**

**16:30 – 17:00 Distribution of Certificates and Closing Ceremony**

