Learn & Improve Professional Skills Session 14
Dosimetry Committee
Wednesday, October 23, 09:45 - 11:15

Session Title
Advanced Techniques and AI in Dosimetry

Chairpersons
Ana Denis-Bacelar (Teddington, UK)
Silvano Gnesin (Lausanne, Switzerland)

Programme

09:45 - 10:15 **Sarah McQuaid** (London, UK): Advanced imaging devices and reconstructions

10:15 - 10:45 **Stefaan Vandenberghe** (Ghent, Belgium): Technical review/teaching of AI and MC methods applied in nuclear medicine IQ and dosimetry

10:45 - 11:15 **Kuangyu Shi** (Bern, Switzerland): Clinical applications of AI for IQ and dosimetry

Educational Objectives
1. Present and discuss the impact and potentiality of advanced imaging techniques to improve IQ and dosimetry workflows in nuclear medicine.
2. Introduce and explain the bases of artificial intelligence methodologies applied in IQ and dosimetry workflows in nuclear medicine.
3. Review the main research development and clinical applications of AI-based in IQ and dosimetry.

Summary
The present LIPS aims presenting and discussing the main advancement in nuclear medicine, Image quality (IQ) and internal dosimetry, coming from continuous improvements of imaging techniques and software solutions. Imaging devices benefits from advanced architectures enabling superior detection sensitivity, spatial resolution, and image contrast. In this domain full-ring CZT SPECT/CT, and long-FOV PET are playing an important role. At the same time software solutions involving a growing use of artificial intelligence (AI) techniques are moving from the research stage to clinical implementation fostering both IQ and dosimetry. Hence, two lectures in the present LIPS session are devoted to introducing bases, reviewing developments and discussing future directions of such solutions.

Key Words
Image quality; dosimetry; artificial intelligence; CZT SPECT; long-FOV PET; Monte Carlo; fast TOF