



CME Session 11

Radiation Protection Committee

Tuesday, October 20, 15:00–16:30

Session Title

Artificial Intelligence and Radiological Protection: Rethinking Justification and Decision-Making in the Era of Smart Nuclear Medicine

Chairpersons

Elena Prieto (Pamplona, Spain)

Claudia Costantino (Lisbon, Portugal)

Programme

- 15:00–15:20 **Charalampos Tsoumpas** (Groningen, Netherlands): Smarter Images, Safer Patients: How AI Enables Ultra-Low Dose PET and SPECT
- 15:20–15:45 **Robert Seifert** (Bern, Switzerland): Rethinking Justification: How AI Challenges Traditional Risk-Benefit Decisions
- 15:45–16:10 **Irene Buvat** (Orsay, France): AI in Therapy Planning and Response Assessment: Decision Support or Decision Driver?
- 16:10–16:30 **Adrien Depeursinge** (Lausanne, Switzerland): Trust and Robustness in AI-Driven Segmentation and Decision Support

Educational Objectives

1. Understand how artificial intelligence techniques can contribute to reducing radiation doses in PET and SPECT imaging and the potential influence on the traditional principle of justifying nuclear medicine procedures
2. Discuss the role of artificial intelligence in radioligand therapy planning, dosimetry and response assessment
3. Explain the challenges of transparency and trust in AI-driven systems that could affect patient radiation protection

Summary

Artificial intelligence (AI) is rapidly transforming nuclear medicine by enabling advanced image reconstruction, automated quantification, and clinical decision support. These developments have significant implications for radiological protection, particularly in terms of dose optimisation and justification of procedures. This session will explore how AI can contribute to reducing patient radiation exposure while maintaining or improving diagnostic accuracy. It will also address how AI challenges traditional decision-making frameworks, raising questions about responsibility, explainability, and trust. By bringing together leading European experts, the session aims to provide a multidisciplinary perspective on how radiological protection principles must evolve in the era of intelligent systems and data-driven medicine.

Key Words

Artificial Intelligence; Radiation Protection; Nuclear Medicine; PET; SPECT; Dose Optimisation; Justification; Decision-Making; Explainable AI