Contribution ID: **19** Type: **not specified**

Compton camera with dual perpendicular silicon photomultiplier read-out –a Monte Carlo study

Wednesday, 3 December 2025 14:30 (30 minutes)

Compton cameras are gamma imaging systems utilized for many applications, from homeland security and environmental radiation activity assessment, to medical imaging. The Compton camera presented in this study consists of segmented scintillators that are read-out by silicon photomultipliers (SiPMs) from two sides. The 4 x 4 x 4 cubical assembly of 3 mm x 3 mm x 3 mm Gadolinium Aluminum Gallium Garnet crystals doped with Cerium (GAGG:Ce) is separated into four layers by optical reflectors, enabling the decoding of the depth of interaction (DOI) information by simultaneously detecting the emitted light in one layer by the two SiPMs, positioned perpendicularly to each other. The SiPMs have 4 x 4 pixels that are coupled one-to-one to the crystals at their respective sides. We will present the study of this novel type of detector for Compton imaging, conducted in Geant4, with point sources of medically relevant energies at various positions around the detector.

Author: KOŽULJEVIĆ, Ana Marija (Institute for Medical Research and Occupational Health)

Co-authors: JAZVAC, Gabriela (Institute for Medical Research and Occupational Health); PAVELIĆ, Luka (Institute for Medical Research and Occupational Health)

Presenter: KOŽULJEVIĆ, Ana Marija (Institute for Medical Research and Occupational Health)

Session Classification: Exotic atoms: fundamental aspects, applications and advances in radiation detectors