Contribution ID: **101**   Type: **Oral Communication**

Imaging methods for in-vivo BNCT by using Compton camera type detector

Monday 1 July 2024 14:40 (20 minutes)

Boron Neutron Capture Therapy (BNCT) is an innovative and highly selective treatment against cancer. Nowadays in-vivo dose measurements and monitoring are important issues to carry out such therapy in clinical environments. In this work, different imaging methods were tested for dosimetry and tumor monitoring in BNCT based on a Compton camera detector. A dedicated data-set was generated through Monte Carlo tools to study the imaging capabilities. First, the Maximum Likelihood Expectation Maximization iterative method was applied to study dosimetry tomography. As well, two methods based on morphological filtering and Convolutional Neural Networks respectively, were studied for tumor monitoring. The results of each method and clinical aspects such as dependence by boron concentration ratio in the image reconstruction, and the stretching effect along the detector position axis will be discussed during this talk.

Author: RAMOS LOPEZ, Dayron (Universita e INFN, Bari (IT))

Co-authors: GONG, Chunhui (Nanjing University of Science and Technology, China); PUGLIESE, Gabriella (Universita e INFN, Bari (IT)); IASELLI, Giuseppe (Universita e INFN, Bari (IT)); FERRARA, Nicola (Universita e INFN, Bari (IT)); PROTTI, Nicoletta (Instituto Nazionale di Fisica Nucleare, Sezione di Pavia); ALTIERI, Saverio (Instituto Nazionale di Fisica Nucleare, Sezione di Pavia); PASCALI, Valeria (Instituto Nazionale di Fisica Nucleare, Sezione di Pavia)

Presenter: RAMOS LOPEZ, Dayron (Universita e INFN, Bari (IT))

Session Classification: Applications