



Contribution ID: 219

Type: Poster

A Gaseous Compton Camera using a 2D sensitive gaseous photomultiplier for Nuclear Medical Imaging

A concept of a Compton Camera (CC) based on a High Pressure Electroluminescence Chamber coupled to a position sensitive Gaseous PhotoMultiplier (GPM) for Nuclear Medical Imaging (NMI), is proposed.

A Compton Camera presents a different solution of the Gamma Camera (GC) as it provides position and energy information about the incoming photon via electronic “collimator”, instead of the use of a mechanical collimator responsible for the huge reduction of the sensitivity of the GC.

In the proposed concept the high pressure chamber filled with a mixture of noble gases up to 20 bar, has a drift/conversion region which acts as the active detection medium and a scintillation region where the drift electrons produce VUV photons that are detected by the 2D-position sensitive GPM, using a reflective CsI photocathode on top of a cascade of THGEMs. The third dimension of the interaction position is determined by the electrons drift time. The information of the 3D interaction position and deposited energy, will allow to determine the cone of emission and so, image reconstruction.

In this work we present the developments of the proposed Compton Camera with an 12 cm diameter active area. Comparison with other systems will be presented together with simulations of the detector response and initial experimental results, as well as the GPM imaging capability to detect VUV light.

quote your primary experiment

-

Primary author: VELOSO, João (I3N, Physics Department, University of Aveiro)

Co-authors: SILVA, Ana (I3N, Physics Department, University of Aveiro); AZEVEDO, Carlos (I3N, Physics Department University of Aveiro); PEREIRA, Fábio (I3N, Physics Department, University of Aveiro); CARRAMATE, Lara (I3N, Physics Department, University of Aveiro); CORREIA, Pedro (I3N, Physics Department, University of Aveiro); LOPES, Tiago (I3N, Physics Department, University of Aveiro)

Presenter: VELOSO, João (I3N, Physics Department, University of Aveiro)

Track Classification: Medical Applications