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## A Gaseous Compton Camera with MPGD-based readout

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A new Gaseous Compton Camera is under development. It consists on a High Pressure Gas Scintillation Proportional Counter being the light read-out by a gaseous photomultiplier. The photosensor is composed by a CsI photocathode deposited on the top electrode of a THGEM based structure with position capability and operating in a Ne/CH<sub>4</sub> mixture at atmospheric pressure. Calculations and simulation studies were performed in order to optimize the gas/mixture in the scintillation chamber, envisaging medical applications. The Doppler-Broadening effect, the image quality and detector dead-time were studied for pure Ne, Ar, Xe and their mixtures at a pressure of 10 bar, when irradiates with 140 keV gamma photons. The detector was fully simulated including the primary charge and scintillation production, electron drift and electroluminescence amplification. Also, the VUV photon detection and solid angle viewed by the gaseous photomultiplier, were included. Firsts experimental studies, namely the primary scintillation and electroluminescence detection as function of the applied voltages and position and energy resolution will be presented. Acknowledgements: This work was partially supported by project CERN/FP/123597/2011 and PTDC/FIS/1130937/2009 through COMPETE, FEDER and FCT (Lisbon) programs. A.L.M. Silva, L.F.N.D. Carramate are supported by a doctoral grant from FCT (Lisbon) with the respective references SFRH/BD/61862/2009 and SFRH/BD/71429/2010. C.D.R. Azevedo is supported by a Postdoctoral grant from FCT (Lisbon) with the reference SFRH/BPD/79163/2011.

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