Contribution ID: **141** Type: **Poster**

X-ray Transmission Imaging Performance with a Sealed MPGD

Wednesday, 27 June 2018 16:00 (1 hour)

A sealed MicroPatterned Gaseous Detector (MPGD) developed with low outgassing materials and with a gas purification system was applied for X-ray transmission imaging. The purification system is based on getters that remove the gas impurities and keep the detector efficiency stable along time.
The filling gas (pure Kr) allows for high detection efficiency [1], expected good spatial resolution [2] and high gains [3] for 1 –30 keV, the photon energy range suitable for breast and small animal imaging.
In order to characterize the detector performance for spectral X-ray imaging, studies of energy resolution, uniformity, signal-to-noise ratio and spatial resolution are being performed. Images to evaluate the detector performance for X-ray imaging were corrected with a flat field acquisition in an attempt to uniform the image intensity and performance in the full detector active area. First results show an energy resolution of about 17% and a spatial resolution
below 500 μm. Results of uniformity, signal-to-noise ratio and spatial resolution as a function of photon energy will be presented.

REFERENCES
[1] M. J. Berger, J. H. Hubbell, S. M. Seltzer, J. Chang, J. S. Coursey, R. Sukumar, D. S. Zucker and K. Olsen, XCOM: Photon Cross Sections Database, (2011)http://www.nist.gov/pml/data/xcom/index.cfm.
[2] C. D. R. Azevedo, S. Biagi, R. Veenhof, P. M. Correia, A. L. M. Silva, L. F. N. D. Carramate and J. F. C. A. Veloso, Position resolution limits in pure noble gaseous detectors for X-ray energies from 1 to 60 keV, Phys. Lett. B 741, (2015) 272.
[3] L. F. N. D. Carramate, A. L. M Silva, C. D. R. Azevedo, I. Fortes, S. G. Monteiro, S. Sousa, F. M. Ribeiro, S. De Francesco, D.S. Covita and J. F. C. A. Veloso, THCOBRA X-ray imaging detector operating in pure Kr, submitted to JINST; Preprint JINST_061P_0317.

Primary author: DAS NEVES DIAS CARRAMATE, Lara Filipa (University of Aveiro (PT))

Co-authors: CALAPEZ DE ALBUQUERQUE VELOSO, Joao Filipe (University of Aveiro (PT)); DE FRANCESCO, S. (High School of Health Sciences, University of Aveiro, 3810-193 –Aveiro, Portugal); DA ROCHA AZEVEDO, Carlos Davide (University of Aveiro (PT)); FREIRE, J. (High School of Health Sciences, University of Aveiro, 3810-193 –Aveiro, Portugal); ALMEIDA, L. (High School of Health Sciences, University of Aveiro, 3810-193 –Aveiro, Portugal); NUNES, R. (I3N, Physics Dept, University of Aveiro, 3810-193 –Aveiro, Portugal); DOS SANTOS, Joaquim Marques Ferreira (University of Coimbra)

Presenters: DAS NEVES DIAS CARRAMATE, Lara Filipa (University of Aveiro (PT)); DOS SANTOS, Joaquim Marques Ferreira (University of Coimbra)

Session Classification: Poster session