MPGD 2015 & RD51 Collaboration meeting



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Investigations of Kr-Xe mixtures in gas avalanche detectors

Tuesday, 13 October 2015 16:00 (1 minute)

Recent investigations with a gaseous avalanche micropatterned detector operating in Kr-Xe mixtures will be presented. The use of such mixtures allows to keep a minimal position resolution over a wide X-ray energy range [1]. Measurements and simulations of the gain, energy and position resolution variation according to the Xenon mixture concentration will be presented. Our first results using a THCOBRA [2], measured and calculated, indicate a gain increase with the increase of Xe concentration. Calculation of the number of primary electrons and W value for such mixtures will be also presented.

The performance of the THCOBRA detector using different mixtures will be compared to the calculated results with a discussion of the possible deviations. Also, details on the gas purification system will be present.

The experimental results were obtained by using a 55Fe providing 5.96 keV photons while the calculations were performed by using Degrad software [3].

The detector, irradiated with an X-ray tube to produce image acquisition and its application on Computed Tomography applications will be discussed [4].

A discussion and results comparison with Kr and Xe pure will be presented.

- [1] C. D. R. Azevedo et al., Phys. Lett. B, vol. 741, no. 0, pp. 272-275, 2015.
- [2] A. L. M. Silva et al., NSS/MIC,IEEE, 2012, pp. 1160-1164
- [3] S. Biagi, "Degrad." [Online]. Available: http://consult.cern.ch/writeup/magboltz/.
- [4] L. F. N. D. Carramate et al., NSS/MIC, IEEE, 2012, pp. 3664-3666.

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Presenter: Prof. VELOSO, João (University of Aveiro)Session Classification: Poster session & coffee break

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