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Operation of a sealed Kr based micropatterned detector

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Stand alone operation of gaseous detectors is a very desirable feature that is not easy to implement for some configurations/applications. However, some strategies can be implemented in order to achieve high level of portability when considering the use of getters to keep the gas clean in a sealed envelope. In this work we implemented a simple purification system in a pure Kr based detector using a 2D - ThickCobra as the electron amplification structure. The detector body and parts are made on clean materials and the purification is done through convection. The reason of using Kr as the filling gas is due to its high detection efficiency in an interesting X-ray energy range (1-30 keV) and its intrinsic capability to achieve high gains. Preliminary results indicate that no pulse amplitude deviation was observed during several weeks. The detector performance as a function of the functional parameters were studied. Together with these results, long term stability of the detector energy resolution and pulse amplitude, in sealed mode, for different purification conditions, will be presented.

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