

THCOBRA detector performance in mixtures of Kr/Xe mixtures

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The application of THCOBRA based detectors for X-ray imaging has been studied. The optimization of detector performance is intrinsically related with the study of the gas mixture capable of providing the better image quality. When operating in gas flow mode with a gas mixture of Ne/CH₄ (95/5), a charge gain of 10⁴ was achieved, together with an energy resolution of about 22% (@ 8 keV), and a spatial resolution close to 1.2 mm (for about 4 keV) were achieved [1]. For pure Kr, in a sealed detector, the achieved energy resolution was 23% (@ 5.9 keV) and the spatial resolution was 650 μ m (for 16.5 keV) [2], allowing to improve detector performance when compared with its operation in Ne/CH₄ [3, 4]. In this work, detector performance in terms of charge gain, energy and spatial resolutions were studied, for different gas mixtures of Kr and Xe, namely 98/2, 95/5, 90/10 and 85/15. Results will be presented and compared with the previously achieved.

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