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# Study of Highly Pixilated CdZnTe Detector for PET applications

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In this study we investigate the feasibility of a high resolution PET insert device based on CdZnTe detector with sub-millimeter anode pixel size to be integrated into a conventional animal PET scanner to improve its image resolution to sub-millimeter range. In this study we investigated the position resolution, energy resolution and timing properties of the CdZnTe detector.
In this work, we have used a simplified version of the future 2048-pixel CdZnTe planar detector with 0.25 mm anode pixel size and 0.350 mm pitch. The simplified 9 anode pixel structure makes it possible to carry out experiments without a complete ASIC readout system (with 2048 channels) that is still under development.
The experimental measurements were accompanied by Monte Carlo simulations. The MC simulations include the generation of the hole-electron charge cloud (EGSnrc code), charge trapping and diffusion. Numerical integration of the 3D Laplace equation is used for calculation of electric field and weighting potentials of the finite 3D detector structure.
Special attention was paid for the charge charring events.

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