PRELIMINARY RESULTS OF THE SMALL ANIMAL ROTATION-AL POSITRON EMISSION TOMOGRAPHY SCANNER

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This contribution reports preliminary results of a high-resolution small animal positron emission tomography (PET) based on pairs of opposed scintillation rotating detectors working in time coincidence. Each detector is comprised of a 35 x 30 array of LYSO crystals coupled to a position-sensitive photomultiplier tube; the assembly is self-shielded. Detectors separation can be adjusted between 150 and 200 mm. The data acquisition computer controls the gantry rotation as well as the bed displacements.

Tomographic images are reconstructed from lines of response falling within a user-specified angle of each detector normal to limit the depth of interaction effect. These reconstructions are done with filtered back projection and statistical iterative methods that includes a model for the depth of interaction to minimize the parallax error. The system field-of-view is *48* mm x 48 mm, with a resolution of 1.7 mm FWHM (FBP), 56 slices 0.7 mm thick, and a sensitivity of 350 cps/uCi for a 250-650 kcV energy window.

Dynamic resolution for tomographic imaging is limited to the minimum rotation time, although planar imaging projection can be done with maximum time resolution. This low cost design has probed to be a valid solution when high performance tomography and temporal resolution requirements are not simultaneously required.