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Breast-dedicated PET system with a personalized gantry

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We developed a breast-dedicated PET system with a personalized gantry for breast cancer diagnosis. The detector module consisted of 24 × 12 array of LSO and GAGG crystals with a pixel size of 2 mm × 2 mm × 10 mm. The scanner was composed of 4 rings and each ring was arranged in polygonal shapes. The ring shape can be changed from 12-square to 10-square, 9-square and 6-square shapes with a radius of 8.9 cm, 7.3 cm, 6.9 cm and 4.15 cm, respectively. To evaluate the effect of gantry size on the system sensitivity, total coincidence count rates were simulated with 5 MBq Na-22 source by GATE code. Sensitivity was measured as 6%, 6.9%, 7.2% and 10.3% for LSO and 2.7%, 3.1%, 3.2%, and 4.6% for GAGG for 12-square, 10-square, 9-suqare and 6-square, respectively. The simulation results indicate that high sensitivity can be achieved in breast PET by an applying transformable personalized gantry.

Has accepted

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