

Performance of NEMA characteristics of Modular J-PET

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Abstract

The Modular J-PET scanner, developed by the J-PET collaboration, is a new prototype PET scanner developed based on axially arranged plastic scintillators as a large axial field of view (50cm) affordable tomograph. In this study, the performance characteristics of the scanner were evaluated according to NEMA NU2-2018 standards using Monte Carlo simulation. In order to ensure the selection of true coincidence events, certain criteria were established. Specifically, each photon emitting from a single annihilation must deposit at least 200 keV within 4 ns of a coincidence time window. The preliminary results showed that the sensitivity profile peak was 4 cps/kBq at the center of the detector, While the scatter fraction was estimated to be 39% using the single slice rebinning algorithm. Spatial resolution was estimated around 4.5 mm in the radial and tangential direction and 18 mm in the axial direction.

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