

Time and hit position reconstruction method for Positron Emission Tomography based on a library of model events

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Collaboration

J-PET

Abstract content

Positron Emission Tomography is a very successful medical imaging system. However, the current PET modalities do not allow for simultaneous whole body imaging because the number of crystals, photomultipliers and electronics modules increase linearly with increasing longitudinal field of view (FOV). Therefore, building a PET detector for covering the whole human body is economically unrealistic when applying the current technologies. The J-PET collaboration is developing a new concept which will allow to built a PET detector with large FOV based on the long strips of polymer scintillators. At present, it is in its early stage of development and requires elaborations of new time and hit-position reconstruction methods which would allow to make use of the potential it offers. In this poster, we will present a novel reconstruction method based on a library of model signals. The proposed method allows to determine time and hit position of the gamma quanta along the large diagnostic chamber with time and spatial resolution. The results are comparable with presently used tomography systems. The characteristics and application of the elaborated method will be presented and discussed.

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