

P25 | **Reconstruction of hit-time and hit-position of annihilation quanta in J-PET detector using synchronized model signals**

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The Jagiellonian Positron Emission Tomograph is an cost-effective scanner [1] being developed at the Jagiellonian University, Krakow. It is composed of long strips of organic scintillators. This detecting system is also capable to study the decays of positronium atoms [2]. In the J-PET detector the amplitude of signals used for reconstruction is strongly dependent on the hit-position of gamma quanta, not on the energy deposited by it. Therefore, a novel reconstruction method based on the comparison of examined signal with the model signals stored in the library using Mahalanobis distance has developed [3]. The method has validated on two strip J-PET module. In the present article results obtained from the validation of reconstruction method will be presented and discussed.

Keywords: J-PET detector, J-PET two strip module, mahalanobis metric

[1] P. Moskal, Patent granted in 2014, Nos. EP2454612B1, WO2011008119, EP2454611, WO2011008118.

[2] P. Moskal et al., Acta Phys. Polon.B 47 509 (2016).

[3] N. G. Sharma et al., Nukleonika, 60 765 (2015).