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Study of TOF-PET performance

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We have investigated the timing resolution and spacial resolution of a pair detector which consists of a silicon photon sensor named MPPC and a newly developed fine silicate scintillator name d LFS. The timing resolution was measured to be 96ps in FWHM extracted from the photon detection time difference of two detectors. This indicates significant progress of the development of TOF capability for the PET system is expected. Wheres the spacial resolution is measured to be 1.0mm in FWHM, which is consistent with the size of the scintillator cell of 3mm x 3mm square.

Therefor we expect next generation TOF-PET system can be achieved with 1mm resolution for the very early cancer detection.

Primary author: Dr TAKESHITA, Tohru (Shinshu Univ.)

Presenter: Dr TAKESHITA, Tohru (Shinshu Univ.)

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