Time Resolving Characteristics of HPK and FBK Silicon Photomultipliers for TOF and PET Applications

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Single SiPM 1mm x 1mm – 50 μm x 50 μm pixel sizes

SiPM arrays x TOF

SiPM matrix x PET

Single Photon spectra HPK
SiPM BV=76.2V, ΔV=1.2V

Single Photon spectra FBK
SiPM BV=30.6V, ΔV=2.3V

Linearity

Background
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Time resolution measurements on HPK and FBK Silicon Photomultipliers for comparison with fully depleted PIN Photodiodes

- trigger signal: Synchronization output of Laser Driver

**HPK SiPM 1x1mm (407 nm laser)**
- $\sigma=98\text{ps}$
- $\Delta V=1.2\text{V}$

**FBK SiPM 1x1mm (407 nm laser)**
- $\sigma=97\text{ps}$
- $\Delta V=2.3\text{V}$

**FBK PIN Diode 1x1mm (783 nm laser)**
- $\sigma=1.328\text{ns}$
- $V_{\text{depl}}=30\text{V}$