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## Characterization of Position Measurement Error, Position Resolution and Photon Number Discrimination for Position-Sensitive SiPM

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Silicon photomultipliers (SiPM) is considered to be a good replacement for photomultiplier tube (PMT) and avalanche photodiodes (APD) in high energy physics, which benefits from its high internal gain, good compactness, excellent timing performance, robustness and insensitivity to magnetic fields. However, pixelated SiPM array generally used in high-resolving scintillation imaging applications, shows its drawbacks of large number of readout channels and limited position resolution by SiPM pixel size. Position-Sensitive Silicon Photomultiplier (PS-SiPM) has been emerged as a special kind of SiPM during the past years; it possesses excellent spatial resolution with greatly reduced readout channels, which enables its promising application, for example, in high resolution PET. Since the PS-SiPM is a relatively new type of SiPM, the standardization of PS-SiPM characterization has not been established, which results in hard comparison of devices from different producers. In this conference, we will propose characterizing methods for the major characteristics of PS-SiPM, including the photon-number resolution, position measurement error and position resolution by taking a 2-D tetra-lateral PS-SiPM developed by NDL (Novel Device Laboratory, Beijing) as an example.

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