

Digital Silicon SPAD Photosensor

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This project focuses on exploring one of the most advanced light sensors coupled to bright scintillator detectors, which are used for detecting ionizing radiation. This novel device, which has been initially developed by the University of Edinburgh for improving the sensitivity of positron emission tomography using a time-of-flight correction, can also enable a whole new generation of radiation detectors for nuclear security. This pioneering sensor combines light detection and electronic signal processing on the same Silicon material. The advantages offered by this technology enable a highly compact, robust and fully digital readout with sub-mm position sensitivity and ultra-fast timing response. The financial support by the Nusec Pilot Projects has enabled a summer student to focus on evaluating this device coupled to various scintillator detectors and to transfer knowledge from the University of Edinburgh to the University of York and Kromek company who envision to explore and utilise this device further.

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