

Silicon Photomultipliers for the SST Camera of the Cherenkov Telescope Array

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The Cherenkov Telescope Array Observatory (CTAO) will be the major global observatory for gamma-ray astronomy over the next decade and beyond. It will consist of two arrays of telescopes of different sizes, one for each hemisphere, and will be sensitive to gamma rays in the energy range from a few tens of GeV to hundreds of TeV. The Small-Sized Telescopes (SSTs) are a crucial component of the southern array, as they will extend the sensitivity of the observatory to the highest energies. Their focal plane will be equipped with 2048 Silicon Photomultiplier (SiPM) pixels, each one read independently by a state-of-the-art full waveform sampling readout. These solid-state sensors offer advantages over the traditional photomultiplier tubes, such as lower operating voltage, higher photon detection efficiency, and tolerance to bright illumination. In particular, they are the best choice for a small and compact camera such as the SST one. After a detailed comparative study, LVR3-type SiPMs from Hamamatsu Photonics were selected, with an active area of $6 \times 6 \text{ mm}^2$, a microcell of $50 \text{ }\mu\text{m}$ and without a protective coating, for optimum performance. The sensors demonstrated to have a higher photon detection efficiency and a lower cross talk compared to the competitors, alongside a low dark count rate. In this contribution, we present the selection process and the latest measurements performed on the SiPMs mounted on the SST camera module.

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