

The Small Size Telescopes for the Southern Site of the Cherenkov Telescope Array

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The Cherenkov Telescope Array (CTA) will use three telescope sizes to efficiently detect cosmic gamma rays in the energy range from several tens of GeV to hundreds of TeV. The Small Sized Telescopes (SSTs) will form the largest section of the array, covering an area of many square kilometres on the CTA southern site in Paranal, Chile. Up to 70 SSTs will be implemented by an international consortium of institutes and teams as an in-kind contribution to the CTA Observatory. The SSTs will provide unprecedented sensitivity to gamma rays above 1 TeV and the highest angular resolution of any instrument above the hard X-ray band. CTA has recently finalised the technology that will be used for the SSTs: the telescopes will be a dual-mirror design with a primary reflector of ~4 m diameter, equipped with an SiPM-based camera with full waveform readout from ~2000 channels covering a ~9 degree field of view. Thanks to the aplanatic and small plate-scale Schwarzschild-Couder configuration of the optics, the camera can be compact (diameter ~50 cm, mass ~50 kg) and low cost. In this contribution, we describe the experience gained operating telescope and camera prototypes during the CTA preparatory phase, and the development of the final SST design, including the technologies involved and the implementation plan for series production.

Keywords

IACT; technology; SiPMs;

Collaboration

CTA

other Collaboration

Subcategory

Experimental Methods & Instrumentation

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