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Development of an optical system for the SST-1M telescope of the Cherenkov Telescope Array observatory

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The prototype of a Davies-Cotton small size telescope (SST-1M) has been designed and developed by a consortium of Polish and Swiss institutions and proposed for the Cherenkov Telescope Array (CTA) observatory. The main purpose of the optical subsystem is to focus the Cherenkov light emitted by extensive air showers in the atmosphere onto the focal plane detectors. The main component of the subsystem is a dish consisting of 18 hexagonal mirrors with a total effective collection area of 6.47 m2 (including the shadowing and estimated mirror reflectivity). Such a solution was chosen taking into account the analysis of the Cherenkov light propagation and based on optical simulations. The proper curvature and stability of the dish is ensured by the mirror alignment system and the isostatic interface to the telescope structure. Here we present the design of the optical subsystem together with the performance measurements of its components.

Collaboration

CTA

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