

A new imaging atmospheric Cherenkov camera for the H.E.S.S. telescopes

The High Energy Stereoscopic System (H.E.S.S.) is an array of five imaging atmospheric Cherenkov telescopes (IACT) located in Namibia. Four of them started operations in 2003 and their cameras are currently undergoing an extensive upgrade, with the goals of reducing the system failure rate, reducing the dead time of the cameras and improving the overall performance of the array. The upgraded components include the readout and trigger electronics, the power, ventilation and pneumatics systems and the control and data acquisition software. New designs and technical solutions have been introduced: the upgraded readout electronics is based on the NECTAR analog memory chip, while the camera control subsystems are based on an FPGA coupled to an embedded ARM computer. The control and data acquisition software is based on C++ libraries such as Apache Thrift, ZMQ and Protocol buffers. These hardware and software solutions offer very good performance, robustness and flexibility. Upon completion, the upgrade will assure the continuous operation of H.E.S.S. at its full sensitivity until and possibly beyond the advent of CTA. The present contribution describes the design, the testing and the performance of the new components of the H.E.S.S. camera upgrade.

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