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The H.E.S.S. Phase II Data Acquisition System

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The High Energy Stereoscopic System (H.E.S.S.) is a system of five Imaging Atmospheric Cherenkov Telescopes (IACTs) located in the Khomas Highland in Namibia. It measures cosmic gamma-rays with very high energies (VHE; > 100 GeV) using the Earth's atmosphere as a calorimeter. The H.E.S.S. array has entered Phase II in September 2012 with the inauguration of a fifth telescope that is larger and more complex than the other four. The very large mirror area of 600 m2 in comparison to the 100m2 of the smaller telescopes results in a lower energy threshold as well as an increased overall sensitivity of the system. Moreover, the parabolic dish allows the utilization of timing information in the shower reconstruction and, together with the improved camera electronics, gener- ates a considerably higher data rate. This talk will give an overview of the current H.E.S.S. data acquisition and array control system (DAQ) with particular emphasis on the first year of operation with the full five telescope array. We present the various requirements for the DAQ and discuss the general design principles to fulfil these requirements. The performance, stability and reliability of the H.E.S.S. Phase II DAQ, which resulted in a DAQ-related observation time loss of less than 1 %, are shown.

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