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The Performance of the H.E.S.S. Target of Opportunity Alert System

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The High Energy Stereoscopic System (H.E.S.S.) is an array of five imaging atmospheric Cherenkov telescopes located in the Khomas Highland in Namibia. Very high energy gamma rays are detected using the Imaging Atmospheric Cherenkov Technique. It separates the Cherenkov light emitted by the background of mostly hadronic air showers from the light emitted by air showers induced by gamma rays. Using the fifth, larger telescope of the array with a huge mirror area of 600 m^2, it was possible to lower the energy threshold down to $\approx$ 30 GeV. With this unique ability to observe large amounts of gamma rays in the high energy gamma-ray regime (< 100 GeV) by using the large effective area of the fifth telescope at these energies, the H.E.S.S. experiment is ideally suited to observe short time scale transient events like gamma-ray bursts (GRBs). Originally detected by the Vela satellites in 1967, GRBs are among the most energetic processes in the known Universe. Extrapolating the spectrum of long duration GRBs (i.e. a GRB duration of the order of a few seconds or above) measured by current satellite experiments like Fermi, which measured gamma rays up to 95 GeV for GRB 130427A, a detection of these phenomena with the H.E.S.S. array is possible.
This presentation will give an update on the H.E.S.S. Target of Opportunity (ToO) alert system. It is used for an immediate and fully automatic response to a prompt GRB alert received via the Gamma-Ray Coordinates Network (GCN). The key feature of this system is a fast repointing of the whole array to a new observation position. The recent decrease of the response time to a ToO alert of more than 50 % achieved by improvements in hard- & software as well as the overall performance of the system will be discussed.

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