

Monte Carlo studies of the VERITAS array of Cherenkov telescopes

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VERITAS is a system of four imaging Cherenkov telescopes located at the Fred Lawrence Whipple Observatory in southern Arizona. We present here results of detailed Monte Carlo simulations of the array response to extensive air showers. Cherenkov image and shower parameter distributions are calculated and show good agreement with distributions obtained from observations of background cosmic rays and high-energy gamma-rays. Cosmic-ray and gamma-ray rates are accurately predicted by the simulations. The energy threshold of the 3-telescope system is about 150 GeV after gamma-hadron separation cuts; the detection rate after gamma-selection cuts for the Crab Nebula is 7.5 gamma's/min. The three-telescope system is able to detect a source with a flux equivalent to 10% of the Crab Nebula flux in 1.2 h of observations (5 sigma detection).