

THE HYBRID APERTURE AND PRECISION OF THE AUGER OBSERVATORY

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The Pierre Auger Observatory has been designed as a hybrid detector, taking advantage of complementary observational techniques – an array of surface water Cherenkov detectors coupled with four air fluorescence detector sites. Such a combination provides excellent reconstruction of the EAS axis geometry using information from both the fluorescence and surface detectors, even at energies below the nominal detector threshold of 10^{19} eV. It also allows for powerful cross-checks of detector performance and analysis techniques through the comparison of surface-only and fluorescence-only reconstruction of the same showers. In this paper we describe the motivation for building a hybrid detector, and we outline the hybrid reconstruction technique. The hybrid aperture as a function of energy will be presented, together with expected resolution figures for shower geometry, energy and the depth of shower maximum.