



Contribution ID: 53

Type: **not specified**

Measuring the spectrum of UHECR with the Pierre Auger Observatory

Friday, 27 May 2011 11:30 (20 minutes)

The Pierre Auger Observatory is an experiment aimed at the detection of the Extensive Air Showers (EAS) produced by the Ultra-High Energy Cosmic Rays (UHECR). It consists of a surface array, that measures the secondary particles at ground level, and a fluorescence detector, that observes the development of EAS above the array.

We report a measurement of the “hybrid” spectrum of UHECR above 10^{18} eV using fluorescence observations in coincidence with at least one water Cherenkov detector of the array. In particular, we discuss the calculation of the hybrid exposure, that is the main ingredient necessary to derive the hybrid spectrum, starting from a detailed knowledge of the time dependence of the detector configurations.

We describe the spectrum based only on the surface array data and its combination with the hybrid spectrum, addressing the systematic uncertainties.

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Session Classification: Ultra High Energy Cosmic Rays