



Contribution ID: 37

Type: **not specified**

Cosmic Ray Composition with the Pierre Auger Observatory

Wednesday, 22 May 2013 10:20 (20 minutes)

The Pierre Auger Observatory in Argentina is the largest cosmic ray detector array ever built. Although the construction was completed in 2008, the Observatory has been taking data continuously since January 2004.

Its main goal is to measure ultra high energy cosmic rays (UHECRs, energy above 10^{18} eV) with unprecedented statistics and precision.

Measurements of the energy spectrum, chemical composition (including neutrinos and photons) and arrival directions of UHECRs can provide hints for understanding their origin, propagation and interactions.

The Fluorescence Detector of the Pierre Auger Observatory measures the atmospheric depth, X_{max} , where the longitudinal profile of the high energy air showers reaches its maximum. This is sensitive to the nuclear mass composition of the cosmic rays and to the characteristics of the hadronic interactions

at very high energy. Due to its hybrid design, the

Pierre Auger Observatory also provides independent experimental observables obtained from the Surface Detector for the study of the nuclear mass composition.

A selection of the

Pierre Auger Observatory results on the study of the UHECRs will be presented, focusing on the composition results.

In particular, the measurements and the different roles of the observables with respect to mass composition will be discussed.

Primary author: BONCIOLI, Denise (INFN Laboratori Nazionali del Gran Sasso)

Co-author: ON BEHALF OF THE PIERRE AUGER COLLABORATION

Presenter: BONCIOLI, Denise (INFN Laboratori Nazionali del Gran Sasso)

Session Classification: I Plenary Session