



Contribution ID: 83

Type: **Talk**

Probing hadronic interaction models with the hybrid data of the Pierre Auger Observatory

Thursday 4 August 2022 17:20 (20 minutes)

The Pierre Auger Observatory is the world's largest extensive air shower detector. Based on two detection techniques, namely fluorescence telescopes for the observation of the longitudinal development and water Cherenkov detectors for particles at ground, this experiment can be used not only as a cosmic ray observatory, but also to study the basic properties of hadronic interactions leading the development of air showers initiated by these primary cosmic rays. We will show that by using careful data selection it is possible to extract the proton-air inelastic cross-section at energies much higher than that accessible at man-made accelerators. Taking advantage of both detection techniques we will demonstrate that it is also possible to test hadronic interaction models using correlations between different air shower observables, like shower maximum and muons at ground, to reduce the uncertainty due to the unknown beam of cosmic rays.

Preferred track

Cosmic Rays and Astrophysics

Subfield

Astrophysics

Attending in-person?

Yes

On behalf of collaboration?

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Session Classification: Cosmic-ray and astrophysics 1

Track Classification: Cosmic ray and astrophysics