



Contribution ID: 1091

Type: Oral contribution

## Extension of the measurement of the proton-air cross section with the Pierre Auger Observatory

*Monday, 3 August 2015 14:00 (15 minutes)*

With hybrid data of the Pierre Auger Observatory it is possible to measure the cross section of proton-air collisions at energies far beyond the reach of the LHC. Since the first measurement by the Pierre Auger Collaboration the event statistics has increased significantly. The proton-air cross section is now estimated in the two energy intervals in  $\lg(E/eV)$  from 17.8 to 18.0 and from 18.0 to 18.5. These energies are chosen so that they maximise the available event statistics and at the same time lie in the region most compatible with a significant primary proton fraction. Of these data, only the 20% of most proton-like events are considered for the measurement. Furthermore, with a new generation of hadronic interaction models which have been tuned to LHC data, the model-dependent uncertainties of the measurement are re-visited.

### Collaboration

Pierre Auger

### Registration number following "ICRC2015-I"

887

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**Session Classification:** Parallel CR14 Hadr Int

**Track Classification:** CR-EX