

Reviewing recent results from the Pierre Auger Observatory

Tuesday, 5 June 2012 17:15 (0:20)

Abstract content

The Pierre Auger Observatory, located in Argentina, detects cosmic rays with energies from 100 PeV to above 100 EeV. By combining a 3000 km² surface detector array (SD) with 24 overlooking fluorescence telescopes (FD), the Auger Observatory can observe both the longitudinal development and lateral spread of cosmic ray air showers at ground level. The combination of the two techniques is appropriate to address the development of air showers and high-energy hadronic physics. Current popular models, such as EPOS, QGSJET-II, and SIBYLL are quite successful in predicting the longitudinal development, but not the number of muons, as they are observed in the surface detector array. The number of muons in air showers is highly sensitive to several properties of the high-energy hadronic interactions. By combining the data of the SD and FD, the Auger Observatory has opened a window to study events in the 100 TeV center-of-mass energy regime. This has also led to a measurement of the proton-Air cross section at 1.7 EeV (57 TeV center-of-mass). In addition to exploring beyond-LHC physics on Earth, the search for photons and neutrinos at the Auger Observatory place strong constraints on exotic models of cosmic ray production in our galaxy.

Primary author(s) : AUGER, Collaboration (Pierre Auger); Dr. CHINELLATO, Jose Augusto (Universidade Estadual de Campinas, Brasil); Dr. ZAS, Enrique (Santiago de Compostela)

Presenter(s) : Dr. CHINELLATO, Jose Augusto (Universidade Estadual de Campinas, Brasil)

Session Classification : Cosmic Rays

Track Classification : Particles