technische universität
dortmund

SEMINAR TEILCHENPHYSIK

Thema

Hadronic interactions at ultra-high energy

Abstract

The Pierre Auger Observatory can be regarded as a large air calorimeter in a cosmic fixed-target experiment with beam energies reaching beyond 10^{20} eV, or equivalently a center-of-mass energy in proton-nucleus interactions of up to and beyond 400 TeV. As such Auger provides the unique opportunity to take a peek at particle physics well beyond the collision energies that can be obtained at the LHC. One of the key results of Auger is the discovery that these interactions of UHECRs do not behave as expected. Compared to simulations based on models of hadronic interactions, the air showers observed by Auger contain many more muons.

In this seminar I will present the muon measurements by Auger and discuss what they imply about the nature of particle interactions at the highest energies. I will further show how SIBYLL, one of the models of hadronic interactions, can be extended to describe the Auger data and how we can constrain such model extensions at the LHC.

Vortragender

Dr. Felix Riehn
Universität Santiago de Compostela

Ort

CP-O3-123

Zeit

Montag, 06.05.2024
15:00 – 16:00 Uhr

im Auftrag:

Dr. Maik Becker