

Physikalisches Kolloquium

Ralph Engel, KIT

»What cosmic rays tell us about hadronic interactions at ultra-high energy«

Einführung: Th. Müller

Cosmic rays with energies greater than 10^{20} eV have been observed. If these particles interact with a nucleus in the atmosphere the equivalent center-of-mass energy exceeds by far that of man-made colliders. The secondaries of such interactions produce themselves particles in subsequent interactions and give rise to extensive air showers. Although the particles of the first interaction cannot be observed directly, air showers can be used to study the characteristics of hadronic interactions at ultra-high energy. After a brief introduction to cosmic rays and extensive air showers, the measurement of total cross sections with cosmic ray data is reviewed. As a second example the production of muons in showers is considered. Implications of recent data from the Pierre Auger Observatory are discussed and the physics potential of future measurements is illustrated.

Freitag, 23.10.2009, 17 Uhr c.t.,

KIT, Campus Süd,

Otto-Lehmann-Hörsaal, Physik-Flachbau (Geb. 30.22).

Anschließend Nachsitzung im Gastdozentenhaus „Heinrich Hertz“