

EPOS LHC-R : up-to-date hadronic model for EAS simulations

Wednesday 10 July 2024 10:00 (20 minutes)

The hadron production in the simulation of extensive air showers is a long standing problem and the origin of large uncertainties in the reconstruction of the mass of the high energy primary cosmic rays. Hadronic interaction models re-tuned after early LHC data give more consistent results among each other compared to the first generation of models, but still can't reproduce extended air shower data (EAS) consistently. Ten years after the first LHC tuned model release, much more detailed data are available both from LHC, SPS and hybrid air shower measurements allowing to understand some deficiencies in the model. Properly taken into account in the new EPOS LHC-R, it leads to a change in both X_{\max} and the muon production by air showers. A careful study of the hadronization mechanism is important for the muon production while an update of diffraction and nuclear fragmentation is changing the X_{\max} distribution. The detailed changes introduced in EPOS LHC-R will be addressed and their consequences on EAS observable.

Author: Dr PIEROG, Tanguy

Co-author: WERNER, Klaus (subatech)

Presenter: Dr PIEROG, Tanguy

Session Classification: Contributed talks