Contribution ID: **33** Type: **not specified**

Consequences for LHC from cosmic ray experiments

Thursday 22 November 2012 10:00 (30 minutes)

In cosmic ray experiments, the particles with energies (10ˆ15 –10ˆ19) eV are investigated. This interval corresponds to (1.4 –140) TeV in the center-of-mass system, which is 10 times higher than maximum LHC energy. Many unusual results in cosmic ray experiments in this energy interval were observed, which cannot be explained in frame of existing theoretical models and approaches. For their explanation from a single point of view, the production of new massive state of matter (with mass ˜ 1 TeV) with large orbital momentum is required. The most suitable version is the production of QGP blobs, the decay of which into light quarks is suppressed by large orbital momentum. Possible decay into heavy-quarks (top-antitop) changes the picture of hadron interaction. In this talk, possible approaches to investigations of new QGP state in cosmic rays and LHC experiments are considered, taking into account that threshold energy is considerably lower for nuclei-nuclei interactions and corresponds to LHC energies. For pp-interactions, energy of 14 TeV is insufficient for production of a new state of matter.

Primary author: Prof. PETRUKHIN, Anatoly (Moscow State Engineering Physics Institute (RU))

Presenter: Prof. PETRUKHIN, Anatoly (Moscow State Engineering Physics Institute (RU))

Session Classification: Morning Session

Track Classification: Searches for Phenomena beyond the Standard Model