Contribution ID: **291** Type: **Poster**

Seasonal Variation of Muon Rates Using Full Dataset in Daya Bay Reactor Neutrino Experiment

Friday, 21 June 2024 17:30 (2 hours)

Secondary mesons are produced in the stratosphere when primary cosmic rays collide with atmospheric molecules. Muons from secondary meson (mainly pions and kaons) decays can be detected in underground laboratories. As the temperature increases, the atmospheric density decreases, resulting in a reduced probability of meson interaction with atmosphere molecules and an increased probability of their decays, leading to an increase in the muon intensity. The same effects can be found for muon interaction and muon decays. In underground labs, only high energy muons will be detected. Thus, a positive correlation between muon intensity and atmospheric temperature are expected and the correlation coefficient is expected to change with the overburdens. The Daya Bay Reactor Neutrino Experiment, with three underground experimental halls at different depths, provides an ideal setup to perform such measurement. Positive correlation has been reported by many experiments. With full dataset of more than 14 billion muon events, a more precise measurement of the correlation coefficients is expected. This poster will present the current status of this measurement using full dataset from the Daya Bay Experiment.

Poster prize

No

Given name

Bangzheng

Surname

Ma

First affiliation

Shandong University

Second affiliation

Institutional email

mabangzheng@mail.sdu.edu.cn

Gender

Male

Collaboration (if any)

Daya Bay Reactor Neutrino Experiment

Primary author: MA, Bangzheng (Shandong University)

Presenter: MA, Bangzheng (Shandong University)

Session Classification: Poster session and reception 2

Track Classification: Atmospheric neutrinos