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Geant-4 simulation study of cosmic ray muons with new muon telescope at GRAPES-3 experiment

Thursday 15 December 2022 14:00 (1 hour)

Muons produced by the interaction of primary cosmic rays in the Earth's atmosphere serve an excellent tool for studying various solar phenomena, primary cosmic ray composition, and gamma ray sources. The GRAPES-3 experiment at the Cosmic Ray Laboratory in Ooty is home to the world's largest muon telescope. Another muon telescope of similar detection area (560 m^2) is under construction to enhance its physics sensitivity as mentioned above. We have performed a study of the detection of muons with the GRAPES-3 new muon telescope using GEANT4 simulations. In this contribution, we will present the details of the geometry reconstruction of the new muon telescope, including proportional counters and the concrete used for shielding the electromagnetic and hadronic components. We will also present the response of the new muon telescope to various particles in the cosmic ray shower.

Session

Future Experiments and Detector Development

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