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LPM-effect included simulation of cosmic ray muons penetrating the CMS cavern

Abstract content

We study the propagation of energetic muons produced by ultra high energy cosmic rays which could penetrate to the cavern of the CMS (Compact Muon Solenoid) tracing detector. The present work is based on our previous simulation proposed by Mahrous et al. [2005]. We have improved this model by (1) eliminating the ambiguity via adding Landau-Pomeranchuk-Migdal effect to the Monte Carlo code (2) using different incidence angles of the simulated air showers, (3) defining the actual contents of the CMS cavern concrete. Our results show that muons produced by air showers within the energy range $10^{13} \sim 10^{20}$ eV injected to the CMS location could penetrate to its cavern with cutoff energy 37 GeV, the later should be detected as a background in the CMS detectors.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

Primary author(s) : Prof. SHERIF, Mohamed (Cairo university); Dr. MAHROUS, Ayman (Helwan University)

Co-author(s) : Mr. MOSTAFA, mohamed (Cairo University); Mr. MOUSSA, Omer (Cairo University); Mr. ASRAN, Yasser (Suez Canal University)

Presenter(s) : Prof. SHERIF, Mohamed (Cairo university)

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