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A GEANT-based package for determination of the PAMIR experiment X-ray emulsion chamber response

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Abstract content

Analysis of various data accumulated in X-ray emulsion chamber experiments, especially, data on gamma-ray–hadron families with unusual characteristics (Centauros, aligned events etc.), requires a comprehensive program to simulate the propagation of electromagnetic and various-type hadron particles through sandwich-like media of emulsion chambers as well as measuring procedures used for emulsion chamber data processing. Such a new computer code ECSim 2.0 has been recently elaborated on basis of the GEANT 3.21 package. As compared to the latter, the ECSim 2.0 takes into account the LPM effect for gamma-rays and electrons, uses new cross sections of muon interactions of different types allowing also for the LPM effect in pair generation, incorporates QGSJET model for simulation of high-energy hadron interactions and accounts for production and interactions of charm particles. Besides, measuring and data treatment procedures employed in the Pamir experiment are simulated properly. Main features of the ECSim 2.0 code and some results obtained for the Pamir emulsion chamber experiment are discussed. The ECSim 2.0 can be used widely for data analysis in various X-ray emulsion chamber experiments.

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

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 4 (HE part 1), pages 593-596

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