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Impact of X-Ray Emulsion Chamber Response on Gamma-Family Observable Characteristics

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Analysis of various data accumulated in X-ray emulsion chamber experiments, especially, data on gamma-hadron families with unusual characteristics (Centauros, aligned events etc.), requires a comprehensive computer code to simulate propagation of electromagnetic and various-type hadron particles through a sandwich-like medium of emulsion chambers as well as measuring procedures employed for emulsion chamber data processing. Such a new code, ECSim 2.1, has been recently elaborated on the basis of GEANT 3.21 package. As compared to the latter, the ECSim 2.1 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 or MC0/FANSY models 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. An impact of X-Ray emulsion chamber response on gamma-family observable characteristics is discussed.

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