DPMJET-III, A HADRONIC INTERACTION MODEL FOR CASCADE SIMULATIONS

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A new version of the Monte Carlo event generator DPMJET for hadronic cascade simulations is presented. DPMJET-III is based on the Dual Parton Model and combines all features of the DTUNUC-2, DPMJET-II and PHOJET 1.12 event generators. It allows the simulation of hadron-hadron, hadron-nucleus, nucleus-nucleus, photon-hadron, photon-photon and photon-nucleus interactions from a few GeV up to the highest cosmic ray energies.

The event generator uses the Gribov-Glauber multiple scattering formalism for the description of high-energy nuclear collisions. Interactions are simulated based on the exchange of multiple soft and hard Pomerons including a model of recursive Pomeron graphs as well as of incoherent diffraction.

An overview is given of the different components and models of DPMJET-III. Model results are compared to accelerator data and predictions of particle production at highest cosmic ray energies are presented. The application of DPMJET-III as event generator in transport codes for air shower simulations is discussed.