Contribution ID : **1278** Type : **Poster**

Comprison of hybrid and monte carlo shower generators on an event by event basis.

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Abstract content

SENECA is a hybrid air shower simulation written by H. Drescher that utilizes both Monte Carlo simulation and cascade equations. By using the cascade equations only in the high energy portion of the shower, where they are extremely accurate, SENECA is able to utilize the advantages in speed from the cascade equations yet still produce complete, three dimensional particle distributions at ground level. We present a comparison, on an event by event basis, of SENECA and CORSIKA, a well trusted MC simulation. By using the same first interaction in both SENECA and CORSIKA, the effect of the cascade equations can be studied within a single shower, rather than averages over many showers. Our study shows that for showers produced in this manner, SENECA agrees with CORSIKA to a very high accuracy as to densities, energies, and timing information for individual species of ground-level particles from both iron and proton primaries with energies between 1EeV and 100EeV. Used properly, SENECA produces ground particle distributions virtually indistinguishable from those of CORSIKA in a fraction of the time. For example, for a shower induced by a 40 EeV proton simulated with 10ˆ-6 thinning, SENECA is 10 times faster than CORSIKA.

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 645-648

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