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Electromagnetic shower simulation with FLUKA

Tuesday, July 12, 2022 12:30 PM (30 minutes)

The hadronic interaction models of FLUKA are interfaced with Corsika(7) since many years (a presentation on this subject will take place on Thursday)

However FLUKA does much more than hadronic interactions, including particle transport and atomic interactions as well.

A summary of the features implemented in the ElectroMagnetic package of FLUKA (EMF) will be briefly presented. EMF had been developed mostly in the '90's in order to substitute and possibly improve both from the physics and computer speed point of view the interface with EGS4 which was used in ancient versions of FLUKA. EMF is very stable and thoroughly benchmarked since many years. Part of the EMF atomic physics is common to other charged particle transported by FLUKA (eg dE/dx, multiple Coulomb scattering etc).

In recent years most of the developments had been aimed at low energies, by introducing explicit orbital motion for each level for $Z=1-100$ in Compton and annihilation interactions, and for (virtual)photon/electron nuclear interactions. Some hints about FLUKA photo and leptonuclear interactions will also be presented, together with a few slides about the FLUKA (anti)neutrino-nucleus interaction model.

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Session Classification: Electromagnetic interactions