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Development of a hybrid air shower simulation tool COSMOS X

Extended COSMOS, COSMOS X, is a major upgrade of the air shower simulation tool COSMOS, which has been developed since 1970's. COSMOS X allows particle tracking not only in the atmosphere of the earth but in the arbitrary spherical media such as water, ice, scintillator, soil and concrete with a common center. This hybrid feature of COSMOS X extends the possibility of shower simulations in the atmosphere of stars and planets. In this contribution basic functions and some interesting applications of COSMOS X are presented. Recent samples include a simulation in the atmosphere of the Sun and an implementation of arbitrary interaction vertex, which allows a simulation of neutrino-initiated showers through external interaction generators.

Collaboration(s)

COSMOS X development team

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