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COSMOS X as a general purpose air shower simulation tool

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An air shower simulation package COSMOS was born in 1970's and has been continuously developing. A recent major update enables particle tracking not only in the atmosphere but also in liquid and solid material by combining with the EPICS detector simulation package. This paper describes the properties of this extended version of COSMOS, namely COSMOS X. COSMOS X is coded using the FORTRAN language and can be compiled using the gFortran compiler and cmake tool. Combination of gas, liquid and solid materials in spherical shells with a common center can be defined as environment. Users can also arbitrary define the electric and magnetic fields. These features allow shower simulations even in the soil, concrete, sea and ice. Also simulations at the Sun and Mars are possible applications. Flexible output control since the previous versions of COSMOS, a set of user hook functions, is also available. In predefined user functions information of each particle in transportation can be easily accessed and users can extract information from them. General introduction to COSMOS and new functions of COSMOS X together with some interesting application cases will be presented in the conference.

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Collaboration

other Collaboration

Subcategory

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