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# The CORSIKA 8 code for the simulation of particle showers in air and dense media

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CORSIKA has been the most-used Monte Carlo code for simulating extensive air showers for more than 20 years. Due to its monolithic, Fortran-based software design and hand-optimized code, however, it has become difficult to maintain and extend for more complex simulation needs. These limitations led to the CORSIKA 8 project, which constitutes a complete rewrite of the CORSIKA core functionality in a modern, modular C++ framework. CORSIKA 8 currently supports the treatment of hadronic interactions with Sibyll 2.3d, QGSJet-II.04, EPOS-LHC and Pythia 8.3, and the treatment of the electromagnetic cascade with PROPOSAL 7.6.2. Particular highlights are the support for multiple interaction media, including air, ice, and water and even cross-media situations, as well as an advanced calculation of the radio emission from these particle showers. In this contribution, we discuss the design principles of CORSIKA 8, give an overview of the functionality implemented to date, the validation of its simulation results, and the plans for its further development.

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