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The radio module in CORSIKA 8

Tuesday, July 12, 2022 2:00 PM (30 minutes)

CORSIKA 8 (C8) is a project structured in a modular and flexible way that allows the inclusion and development of independent modules that can produce a fully customizable air shower simulation. The calculation of radio emission from the simulated particle showers is incorporated as an integral module of C8, including signal propagation and electric field calculation at each antenna location using the "Endpoint"and ZHS formalisms simultaneously. Due to C8's flexibility, the radio functionality can be used both to validate other physics modules and to investigate specific physical scenarios. In this talk, we are going to focus on two aspects of the radio module. First, we are going to present air shower simulations generated with C8 and compare their predicted radio emission with corresponding air showers simulated with CORSIKA 7 and ZHAireS. The incorporation of both calculation formalisms in the same code also allows detailed comparisons for the same underlying shower, which we will discuss as well. And second, the structure and design of the module is going to be displayed along with potential updates to it in order to be able to simulate more sophisticated use cases.

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