

Towards a fast simulation of a water Cherenkov detector for gamma ray and cosmic ray experiments.

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The secondary particles produced during the interaction of primary gamma rays or cosmic rays in the atmosphere can be measured using Water Cherenkov Detectors (WCD).

Detailed simulations of the WCD signals produced by the interactions of the secondaries inside the detector are computationally time consuming, so a fast simulator is desirable.

In this work, we use complete and detailed simulations of a water Cherenkov detector based on Geant4 to obtain a parametrization of the average signal response for different types of secondary particles as a function of the particle energy and incident angle. This parametrization is used to generate approximate signals which match the signals generated by the full detector simulation.

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Collaboration

other Collaboration

Subcategory

Experimental Methods & Instrumentation

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