

Paweł Jagoda / Numerical simulations of Extensive Photon Cascades and study of their signatures in the Cosmic-Ray

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The cosmic ray research has been so far focused on investigating single air showers. In contrast, the CREDO project is dedicated to studying extremely distributed cosmic ray phenomena, so-called Super-PreShowers. If photons constitute a fraction of ultra-high energy primary particles, on their way through space they may initiate cascades comprising thousands of secondary elements. The simulation package developed attempts to model possible signatures of those events which we expect to observe in the extremely distributed observatory. The model of cascade development employed is governed by a simple probabilistic scenario, which gives similar results in terms of the number of particles and spatial dispersion as anticipated in real experiment. The presented visualisation tool provides signature maps of events that occur in remote locations. The signature maps are designed to be comprehensible to citizen scientists. The resulting map images are made available through the Dark Universe Welcome project. Undoubtedly, both detection as well as non-detection of such an event will extend our knowledge of Universe.