Contribution ID: **804** Type: **Poster**

Universality of Cherenkov Light in EAS

Friday 16 July 2021 19:18 (12 minutes)

Reconstruction of an EAS seen using non-imaging Cherenkov detectors requires simulating the Cherenkov yield of many EAS's with given shower parameters. Since Shower Universality parameterizes both the angular distribution and energy distribution of charged particles within a shower, one can calculate the Cherenkov photon yield (at a fixed point) from the Cherenkov cones of electrons. In this work, we compare both the CWLD (Cherenkov Width Lateral Distribution) and arrival time distributions from Cherenkov universality calculations with those from CORSIKA iact (imaging atmospheric Cherenkov telescope) simulations. Since universality calculations are much less computationally expensive than shower simulation programs like CORSIKA, reconstruction could be accomplished more efficiently using Cherenkov data.

Keywords

Cherenkov Universality

Collaboration

Telescope Array

other Collaboration

nuSpaceSim

Subcategory

Experimental Methods & Instrumentation

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Session Classification: Discussion

Track Classification: Scientific Field: CRI | Cosmic Ray Indirect