

The decoherence curve - measuring the lateral distribution of muons in cosmic-ray air showers

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Cosmic-ray muons are plentiful at sea level; about one per second passes through an outstretched hand. They are useful as calibration tools for people developing particle detectors but are a significant source of background for low-rate experiments and are one of the reasons that deep-underground facilities like SNO-LAB exist. The muons are the decay products of charged mesons (mostly pions) produced in the cascades of particles produced when high-energy cosmic rays (mostly protons and helium nuclei) impact the upper atmosphere. The cascades are known as extensive air showers. One can learn about these showers by measuring the lateral distribution of muons, and this can be done by recording the coincidence rate as a function of the separation of two scintillation counters. In this talk, I will describe such a measurement.

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