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Correlation of Cosmic Ray Muon Intensity with Atmospheric Conditions

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Cosmic rays are highly energetic particles which are produced by a variety of interstellar sources. They continually bombard Earth's upper atmosphere and produce showers of other particles. Such particles contribute a substantial background to many modern physics experiments, so understanding and quantifying the variations in the flux of those particles are important for proper removal of the background from the interesting physics signal. Detection of the (nearly) coincident passage of a particle through a series of scintillators will indicate the direction and energy of cosmic ray muons (a particular type of particle produced in the showers). Correlations between the fluctuations in muon intensity with variations in other parameters, such as local atmospheric pressure, should explain a majority of the fluctuations.

Information about the Author:

Tim Olson is a senior physics and mathematics double major. He has worked on research projects in many fields and locations including last summer at the Large Hadron Collider in Switzerland. He will be attending graduate school in physics in the fall.

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