Cosmic Ray Conundrum: Using a Cosmic Ray Detector with Varied Scintillator Configurations to Determine the Origin of Charged Particles

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Cosmic rays are high penetrating particles that originate in outer space and consist partly of high energy atomic nuclei (Kormen, 2009). The question was what effect does scintillator configurations have on cosmic ray counts per second and can the origin of the particles be predicted? The first hypothesis was if all of the particles are from a common origin, then as one of the scintillators is moved away from the original stack of four, the events measured per second will be slower. If the particles are from a different origin, the events measured per second will remain the same. To being the study a model cosmic ray counter was assembled and each of the four scintillator were calibrated to measure event rate, coincidences, counts per second, all at the same rate (200 counts per second). The program Hyper Terminal was used and connected to the Data Acquisition Circuit Board to record/save the event rate, coincidences, counts per second, for all four scintillators as 100, 200, 400 and 900 counts occurred when one of the scintillators was moved away from the the original stack of four at distances of 0, 1, 2, 5, 10, 20, 40, 60, 80, 66, 147, 243, 302, 370, and 983 centimeters. The hypothesis was supported as one of the four scintillators was moved into an adjoining room the counts per seconds decreased, but never ceased. Therefore it is predicted that meuon collisions within a nucleus in the upper atmosphere created the particles from a common electro shower.

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