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Threshold Cerenkov detector with Radial Segmentation (TCDRS)

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I present the prototype Threshold Cerenkov Detector with Radial Segmentation; as a part of the detector development and implementation research. The detector has three concentric cylinders, each with a different dielectric medium, and four scintillators that triggers cosmic particles with a time of fly of 5 ns. The radiator is designed to produce more photons as the particles travels into the TCDRS and fewer photons as it leaves. The correlation between the number of photons produced in the cylinders and the particle momentum allows particles separation of one sigma, for e , μ , π , κ , and p up to 5 GeV/c. Details of the TCDRS Monte Carlo, construction, data collection and data analysis are presented.

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Primary author: Dr LEON, Ely (Chicago State University)

Co-author: Dr TREADWELL, Elliott (Florida A&M University)

Presenter: Dr LEON, Ely (Chicago State University)

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