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## Calocube - A highly segmented calorimeter for a space based experiment.

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Future research in High Energy Cosmic Ray Physics concerns fundamental questions on their origin, acceleration mechanism, and composition.

Well known “features” of the energy spectra of cosmic rays such as the “knee” region can provide some of the answers to the above questions.

The limits of ground based observations, which rely on sophisticated models describing high energy interactions in the earth’s atmosphere, could be overcome by direct measurements in space.

A calorimeter based space experiment can provide not only flux measurements but also energy spectra and particle ID, especially when coupled to a  $dE/dx$  measuring detector.

Unfortunately fluxes at these high energies are extremely low and require very large acceptances if enough statistic is to be collected in a reasonable time. This contrasts with the lightness and compactness requirements for space based experiments.

A novel idea in calorimetry is presented here which addresses these issues while limiting the mass and volume of the detector.

The proposed calorimeter has a high granularity coupled to a homogeneous segmentation both lateral and in depth. This unique design allows it to achieve excellent distinction between hadrons and electrons while maximizing the acceptance by increasing the number of entry windows to the detector.

A small prototype has already been built and tested with ions. In this talk the results obtained will be presented in light of the simulations performed.

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