

## TRANSITION RADIATION DETECTOR/EM SHOWER COUNTER CALIBRATION

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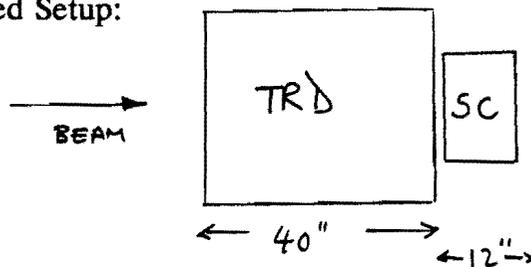
These devices form part of the High Energy Antimatter Telescope, HEAT, which will search for high energy (up to  $\sim 50\text{GeV}$ ) positrons and electrons in the cosmic rays in a high altitude balloon experiment. They are used, in combination with a magnet spectrometer, to identify electrons and positrons in the presence of a large background of protons. For this calibration we wish to test the response of the E/M shower counter and the TRD to electrons and pions to determine the level of discrimination. The most preferable mode of operation would be to operate the devices simultaneously, although it is certainly possible to have the TRD in the beam parasitically with some other calibration and introduce the shower counter for only a short period of data taking.

### Descriptions

TRD: 6 layers of radiator/MWC combinations,  
Overall envelope size 40"X40"X40"  
Mass thickness in beam  $\sim 3\text{g}/\text{cm}^2$

Shower Counter: 10 radiation lengths lead/scintillator sandwich  
Overall envelope size 24"X24"X12" (short dimension along beam)

### Preferred Setup:



### Beam Requirements

Energy: 5-50 GeV electrons and pions (a single energy in this range would be OK)  
Time:  $\sim 40$  hours of beam  
Spot size:  $\sim 10\text{cm}$  diameter if possible  
Tagging: upstream electron tagging if possible

Data taking: All electronics and computers for data taking will be provided by the experimenters, i.e. no FNAL support required.

Scheduling: Anytime after Mid-March 1991