Abstract Submitted
for the APR13 Meeting of
The American Physical Society

Characterization of CALET prototype TASC lead tungstate calorimeter using CERN beam test data[1] AMIR JAVAID, Department of Physics and Astronomy, Louisiana State University, FOR THE CALET COLLABORATION — The CALorimetric Electron Telescope (CALET) is a high-energy cosmic ray experiment that will be placed on the International Space Station in 2014. The primary goals of CALET are to measure the cosmic ray electron spectra from 1 GeV to 20 TeV, gamma rays from 10 GeV to 10 TeV, and protons and nuclei from 10 GeV up to 1000 TeV. The detector consists of three main components: a Charge Detector (CHD), Imaging Calorimeter (IMC), and Total Absorption Calorimeter (TASC). The TASC consists of 192 lead tungstate ($PbWO_4$) logs arranged in 12 layers. An understanding of the major characteristics of the TASC is important for accurately determining the incident particle shower energy deposition. In September 2012, a prototype CALET detector was exposed to electron, muon, and proton beams from the Super Proton Synchrotron (SPS) at CERN. Muon beams can be used to determine the detector response to minimum ionizing particles (MIP). In the present paper, we discuss the response of the TASC logs to muon beams as a function of position, and signal attenuation during propagation. Included is a discussion of parameterizations of position-dependent muon energy deposition and signal attenuation functions for the TASC logs based on the CERN beam test data.

[1]This research was supported by NASA at Louisiana State University under Grant Number NNX11AE01G

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Date submitted: 11 Jan 2013 Electronic form version 1.4