Abstract Submitted
for the APR12 Meeting of
The American Physical Society

Predicted CALET Measurements of Ultra-Heavy Cosmic Ray Abundances and Electron and Positron Fluxes Using the Geomagnetic Field[1] BRIAN RAUCH, Washington University in St. Louis, FOR THE CALET COLLABORATION — The CALorimetric Electron Telescope (CALET) is an imaging calorimeter under construction for launch to the ISS in 2014 for a planned 5 year mission. CALET consists of a charge detection module (CHD) with two segmented planes of 1 cm thick plastic scintillator, an imaging calorimeter (IMC) with a total of 3 radiation lengths (r.l.) of tungsten plates read out with 8 planes of interleaved scintillating fibers, and a total absorption calorimeter (TASC) with 27 r.l. of lead tungstate (PWO) logs. The primary objectives of the experiment are to measure electron energy spectra from 1 GeV to 20 TeV, to detect gamma-rays above 10 GeV, and to measure the energy spectra of nuclei from protons through iron up to 1,000 TeV. In this paper we discuss the capability of CALET to make additional measurements by exploiting the geomagnetic field it will be exposed to in the ISS 51.6° inclination orbit. The rare nuclei heavier than nickel (Z=28) can be resolved using the CHD and top IMC layers without requiring particle energy determination in the TASC in field regions where the rigidity cutoffs are above minimum ionization in the scintillator. CALET can also measure the distinct fluxes of cosmic ray positrons and electrons using the earth shadow of the geomagnetic field.

[1]This research was supported by NASA under Grant NNX11AE02G.

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Date submitted: 06 Jan 2012 Electronic form version 1.4