Abstract Submitted
for the 4CF17 Meeting of
The American Physical Society

Measuring Atmospheric Muon Flux during the 2017 Solar Eclipse
JOSHUA FENDER, JOHN RINGLER, JUSTIN MORSE, Univ of Northern Colorado — For this project, we measured atmospheric muon flux as a function of altitude during the 2017 solar eclipse. This was done as a test of a detector we developed. We wanted to see if it could be used to resolve any difference between the flux measured during the eclipse and average conditions. The detector was part of a self-contained autonomous payload that was carried up to altitude aboard a weather balloon. The payload contained three Geiger counters connected to a coincidence circuit, making up the detection system. This system, along with various other sensors including an internal temperature sensor and altimeter, are controlled by an onboard Arduino Mega microcontroller. An internal frame was constructed to protect the payload components using 3D-printed parts. The payload was launched during the 2017 solar eclipse from Guernsey, Wyoming, very close to the path of totality. Initial data analysis suggests that line-of-sight blockage of the sun due to a total eclipse produces little to no difference in muon flux when compared to the results of previous daytime flights.

Matthew Semak
Univ of Northern Colorado

Date submitted: 20 Sep 2017 Electronic form version 1.4