

Proposal Memo Student Sample

MEMO

To: Will Fleming

From:

Date: 2/22/20

Re: Technical Report

Purpose:

The topic of the report will be an overview of the design, function, and expected results of the Geiger Mueller tube-based cosmic ray detector that the LBCC Space Exploration Club is building. I am the project manager of the team, and therefore have a thorough overview of the project. The cosmic ray detector is designed to be a payload in a NASA rocket that will launch into space, return to Earth, and be retrieved for data analysis.

Background:

1 - The report will consist of four sections.

- The first covering the necessary scientific background of cosmic rays
- The second covering the function of the cosmic ray detector as a whole.
- The third focusing on the basic design of the three primary subsystems of the detector (mechanical, electrical, and software.)
- The fourth laying out the expected results from the experiment.

2 - This type of experiment is not revolutionary. Our experiment's design is similar to the payload that James Van Allen sent to space on Explorer 1 in 1958. There is a great deal of literature on the operation of Geiger Mueller tubes, and the mechanical, electrical, and programming components are all based on well tested existing technology.

3 - This report will be a synthesis of the extensive research the club and I have done over the last two terms in order to conceptualize, design, build, and test the cosmic ray detector.

Proposal:

Communicating our project and goals to individuals without science background has been a consistent problem for the club. The goal of this report will be to clearly communicate the science, design decisions, functioning, and expected results of the cosmic ray detector to a wide audience.

Methods:

The primary research tools that will be used are:

- Mechanical and design requirements from the NASA run 2015 RockSat-C Users Guide
- Documentation of circuit design from the NASA run 2014 RockOn workshop
- Interviews with Jack Higginbotham, a leader in the field of cosmic rays
- Interviews with Parker Swanson, an experienced electrical engineer
- Collaborative original designs by LBCC team members
- A variety of online sources

Primary Research Sources

Higginbotham, Jack: Interviews

Linn Benton Community College Space Exploration Team: Original Designs

RockOn 2014 Workshop Manual: Circuit design

RockSat-C 2015 Program Manual: Mechanical and design constraints

Swanson, Parker: Interviews

Online sources

Georgia State University, Hyperphysics

<http://hyperphysics.phy-astr.gsu.edu/hbase/astro/cosmic.html>

NASA, Cosmicopia: An Abundance of Cosmic Rays

<http://helios.gsfc.nasa.gov/newchlc.html>

Nelson, Brent, What is Cosmic Radiation?

<http://www.physlink.com/Education/AskExperts/ae254.cfm>

Robert, Hart, Hardware Hacking: Cosmic Ray Detectors

http://www.hardhack.org.au/cosmic_rays