HASP 2018 Monthly Status Report

Report Month: February, 2018
Submitted by: Jacob Fonkert
Submit Date: 02 / 23 / 2018
Institution: SDSMT/SURF
Payload Number: 2018-06
Payload Name: Cosmic Ray Detector

I) Activities During Previous Month:

- HASP Application Revision
- Creating heat transfer modelling
- SolidWorks drafting of assembly
- Conferred with Fermilab engineer to create a signal processing board to replace DAQ board
- Completed South Dakota Space Grant Consortium (SDSGC) Project Innovation Grant (PIG) proposal
- Scheduled Critical Design Review (CDR) with SDSM&T advisors that is open to all students for feedback
- Researched previous designs on absorption plates between detectors that will affect the gap between detectors and viewing angle

II) Issues Encountered:

- Issue with pushing purchase order through Black Hills State University - expecting plates to arrive separately in mid-May and mid-June

III) Milestones Achieved:

- Completed Application Revision
- Scheduled CDR
- Submitted SDSGC PIG proposal

IV) Plans for Coming Month:

- Complete CDR (2/27/18)
- Create Detailed Design section for future Final Report
- Progress on preliminary PSIP
- Schedule Test Launch date for April

V) Other Comments:

The DAQ board is looking to be replaced with a more refined board suitable to the needs of this project. The DAQ board had an unnecessarily high sampling time due to its initial design for scintillator pads along with gratuitous functions such as GPS inputs and redundant temperature sensors. Silicon detectors can operate with a lower sampling time so a new, simpler design is in progress.

Because of the issues with the purchase order, the team is actively searching for similar silicon plates to borrow for system testing.

VI) Team Composition and Organization:

The team is composed primarily of a senior design team from SDSM&T and includes students from other disciplines as well as high school students to increase the knowledge and experience of the team. Dr. Peggy Norris is the Education and Outreach Deputy Director at Sanford Underground Research Facility and proposed this project to the design team. She advises the team on all matters related to physics. Dr. Jason Ash is an Associate Professor of Mechanical Engineering at SDSM&T and advises the team on the mechanical side.

Name	Start Date	End Date	Role	Student Status	Race	Ethnicity	Gender	Disabled
Luke Bauske	9/5/17	Present	Mechanical Design	Undergrad	White		Male	No
Zachary Christy	9/5/17	Present	DAQ/Telemetry	Undergrad	White		Male	No
Jacob Fonkert	9/5/17	Present	Team Lead	Undergrad	White		Male	No
Noah Klamm	9/5/17	Present	Materials	Undergrad	White		Male	No
Brandon Lind	9/5/17	Present	Flight Operations	Undergrad	White		Male	No
Kob Meier	9/5/17	Present	CAD Design	Undergrad	White		Male	No
Aaron Vogel	9/5/17	Present	Detector Subsystems	Undergrad	White		Male	No
Isabel Schuster	9/5/17	Present	Physics Analysis	High School			Female	No
Dakotah Rusley	9/5/17	Present	Power Systems	Undergrad	White		Male	No
Sarah Kelly	9/5/17	1/31/18	Systems Integration	Undergrad	White		Female	No
Abbie Woodward	2/14/18	Present	Student Research	High School			Female	No
Dominick Oedekoven	2/14/18	Present	Student Research	High School			Male	No
Steve Gabriel	2/14/18	Present	Flight Advisor	Advisor			Male	No
Peggy Norris	9/5/17	Present	Project Sponsor	Advisor	White		Female	No
Jason Ash	9/5/17	Present	Project Advisor	Advisor	White		Male	No