July 25, 2014

To: Dr. T. Gregory Guzik - HASP Project Director
From: Seth Frick – Team Lead
RE: HASP Monthly Status Report

1. Activities

Replaced and repaired damaged parts on the interface board and retested interfacing with peripheral components, confirming that the issues were resolved. Also assembled a second interface board from the remaining spare parts.

Worked on low-level software including hardware drivers and a kernel module for interrupt handling. Completed software interface testing with all electrical hardware components.

Worked on high-level software architecture, including interrupt handling and state machine logic to incorporate cooperative multitasking.

Continued working on payload structure. Completed machining of all parts, assembled the payload, and mounted internal components. The payload still needs to be painted.

Worked on Flight Operations Plan.

Finished making travel plans for HASP integration.

2. Issues Encountered

Interfacing with the IMU in software was difficult at first, in part due to an additional component being damaged on the interface board. The issue was resolved using the newly assembled second interface board.

Interrupt handling proved to be a more significant challenge than originally thought, since Linux does not expose hardware interrupts to userspace. A custom kernel module was written to handle pin-driven interrupts for detector events, and pass flags and timestamps to the main flight code in userspace.

3. Milestones Achieved

Completed 2014 payload.

Completed Flight Operations Plan.

4. Current Student Team

Name	Gender	Ethnicity	Race	Student Status	Responsibilities
Seth Frick	M	Non-hispanic	Caucasian	Graduate 2nd year	Team lead, detector systems and photon energy measurement, GPS and IMU operation
Andrew Mahon	M	Non-hispanic	Caucasian	Undergraduate Senior	Detector systems, hardware configuration, and structure fabrication
Haley Rorvick	F	Non-hispanic	Caucasian	Undergraduate Senior	Structure design and fabrication, hardware configuration
Josiah DeLange	M	Non-hispanic	Caucasian	Undergraduate Senior	Flight computer and power systems, flight software
Alec Forsman	M	Non-hispanic	Caucasian	Undergraduate Senior	Flight computer and power systems, flight software
Seth Merrifield	M	Non-hispanic	Caucasian	Undergraduate Senior	Thermal monitoring and protection.
John Jackson	M	Non-hispanic	Caucasian	Undergraduate Senior	Detector energy measurement and testing