

HASP Directional Cherenkov Detector

June 2011 Status Report

Activities

The structure of the payload was redesigned to move the electronics out of the aperture of the detector. The electronics are now all stacked together on a side wall allowing for easier wiring and use of space. Quotes from vendors are being obtained on the lead glass and wave length shifting fibers. The PMT voltage divider boards have been redesigned to use up less space and be mounted above the PMTs in the payload.

Design requirements for the power system were determined so that it could be outsourced to LSU's Electronics Shop. A rough schematic and board layout were created with the help of Doug Smith and Brad Ellison. A Hamamatsu high voltage converter will need to be purchased and tested in a low-pressure environment before the board design can be completed. *American High Voltage* had no appropriate converters in stock. An exact layout of the board along with a complete schematic should be completed before the end the month of June.

A small, low cost, digital temperature sensor was chosen for the purpose of monitoring the temperature of key components on the payload. The 1-wire protocol is compatible with the digital I/O pins on the microcontroller with few extra components. A software library as well as sample software code is available for the control of these temperature sensors.

Several PMTs, provided by Dr. Joachim, are in the process of being tested and categorized based on gain characteristics. 10 PMTs will be chosen based on these gain characteristics. The 10 PMTs should have similar gains at voltage inputs between 500 and 1250. The voltage input shall be controlled by a series of resistors at the beginning of the voltage PMT divider network. After these PMTs are selected they will be attached to the Cerenkov radiators via light guides and WLS fibers.

Team Management Structure

Team Electron Volt is comprised of Jace Boudreaux and Sean McNeil. Contact information and individual roles are shown in [Table 1](#).

Table 1 – Team Management Structure

Name	Sean McNeil	Jace Boudreaux	Dr. Gregory T. Guzik
Roles	• Software • Testing • Calibrations • Data Analysis	• Project Management • Electrical • Mechanical	• Faculty Advisor
Department	LSU Physics and Astronomy	LSU Mechanical Engineering	LSU Physics and Astronomy
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