

University of Colorado at Boulder November Status Report

In the month of November, HELIOS III presented their final science presentation to the Colorado Space Grant Consortium. They edited and formatted their final science report and are almost ready to submit it to HASP. They received, populated, and tested their new power board and received the aluminum for the new structure. They assisted in the formation of a new team that plans to apply for a small payload spot alongside HELIOS.

Team Demographics:

Cooper Benson: Caucasian male, sophomore, Aerospace Engineering

Paige Arthur: Caucasian female, sophomore, Aerospace Engineering

Kristen Hanslik: Caucasian female, sophomore, Aerospace Engineering

Dylan Richards: Caucasian male, sophomore, Aerospace Engineering

Ryan Cutter: Caucasian male, sophomore, Aerospace Engineering

Brandon Boiko: Asian / Caucasian male, junior, Mechanical Engineering

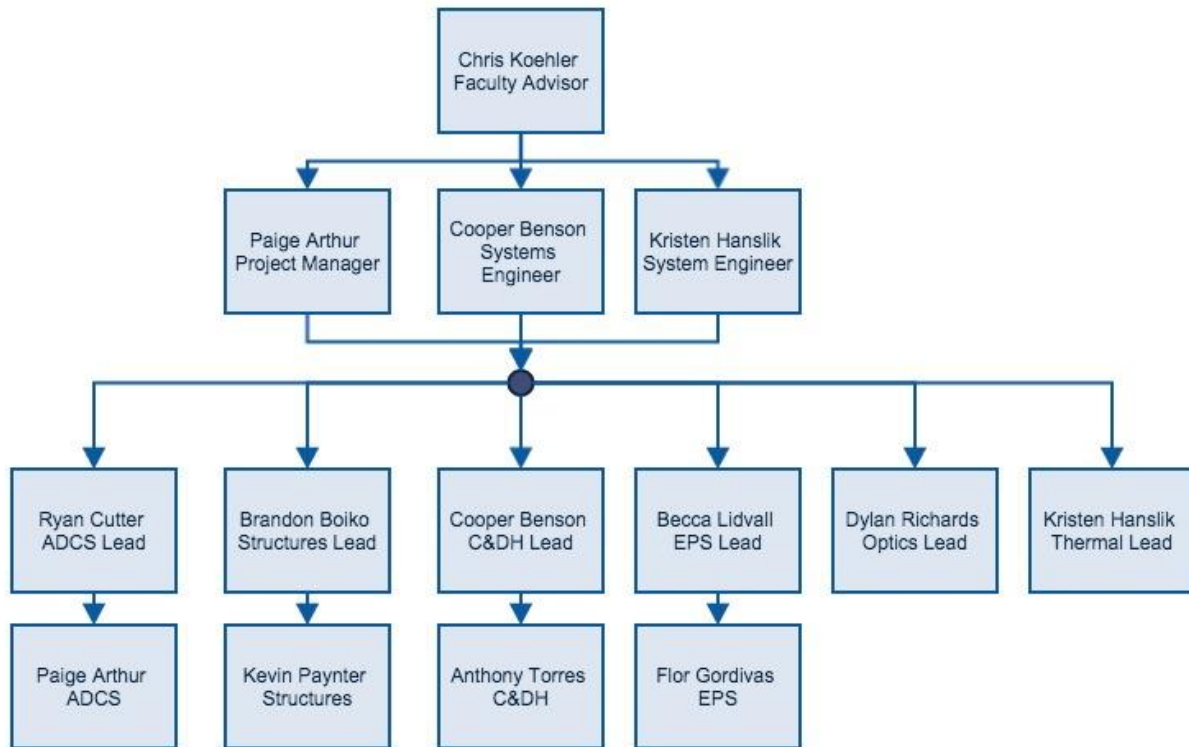
Flor Gordivas: Hispanic female junior, Electrical Engineering

Rebecca Lidvall: Caucasian female, junior, Aerospace Engineering

Anthony Torres: Caucasian male sophomore, Aerospace Engineering

Kevin Paynter: Caucasian male junior, Mechanical Engineering

Team Organizational Chart:



Accomplishments of November:

ADCS: The Attitude Determination and Control System spent most of the month attempting to fix the photodiodes, which ceased functioning at the end of October. Last week they were able to get them working again by ordering new ADCs and surface mount soldering them onto the chips used during flight. They also worked with structures to come up with a solution for the payload's inability to turn on azimuth. They tested the drivers with the new power board to make sure everything on the board is compatible with the system.

C&DH: Command and Data Handling has been working on getting the ADCS camera to function properly. Currently the camera takes nine good images and nine bad images over and over again. The bottom half of the bad images is completely black. CDH is working on contacting the manufacturer of the camera to try to troubleshoot the problem. CDH has also been making progress with the image analysis software, which would allow the diodes to be calibrated during flight. They are also working on allowing the drivers to access the pins it will be using during flight.

EPS: The Electrical and Power System received the board and the components and has fully populated the board. So far the board has proven more reliable than the last one. They have tested with the motors, drivers, and the camera. The only issue so far encountered has been that

the Pi cannot send commands to the drivers; however, this is a purely software problem caused by using a Raspberry Pi B+ instead of a B and was only discovered with the new board because that was the first time the driver tried to access the pins it will be using during flight.

Optics: Optics worked on determining the proper filter strength for the lens system so that the images are no longer saturated with light. They ordered the filter and will insert it into the lens system as soon as it arrives.

Structures: Structures changed the arm length of the payload so that the elevation gears meshed better. They ordered and received aluminum for the new payload and finished a parts list for the new structure. They determined that one of the reasons that it was so difficult to turn on elevation was that the center of gravity of the structure lay below the pivot point, and they have designed the new structure so that the center of gravity lies on the same level as the pivot point. One of the members got accepted for a co-op at Ball next semester and so will be leaving the team in January, but will still try to help out when he can.

Thermal: Thermal has worked with EPS to make sure that the holes by the motor drivers are adequate to be able to heat sink the component.

Management: Management has briefly presented their project to multiple tour groups coming through Space Grant. They orchestrated the final science presentation, which was presented last Monday to Space Grant and their mentor Dr. James Green. They have assisted with the formation of a new team of primarily freshmen who plan to apply for a small payload spot along with HELIOS and have helped them brainstorm ideas for an experiment. They have edited and formatted the final science report and have submitted it to the director of Space Grant for editing before officially submitting it to HASP. They have also coordinated with the director of COSGC.

Plan for December

HELIOS III will make some final modifications to their final science report and submit it to HASP. They will write a proposal to fly again on HASP next summer. They plan to make significant progress in the assembly of the new structure and will continue to test until motion on elevation is established. They hope to get the both cameras functioning properly and simultaneously.