



CoolerSat: A Modular Prototype for High-Altitude Balloon Testing of Satellite Subsystems

Get Away Special Microgravity Research Team
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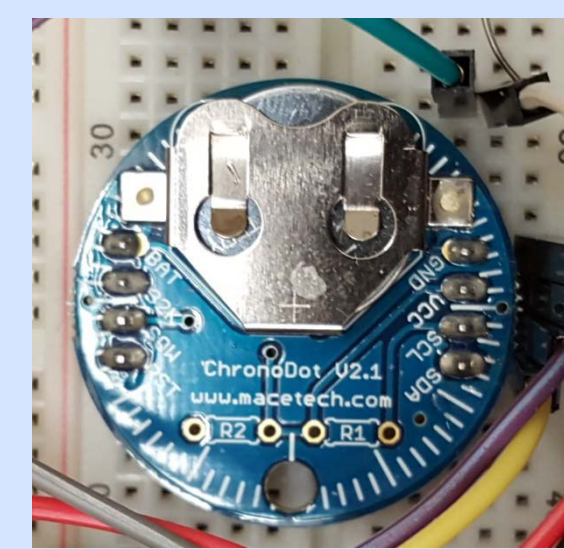
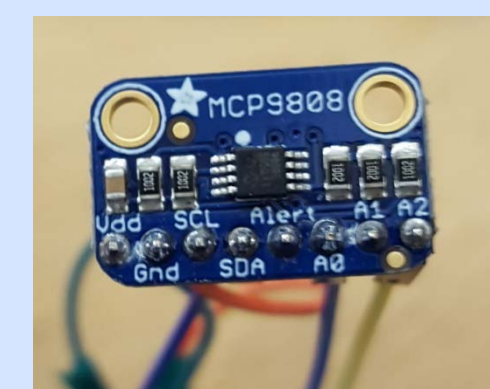
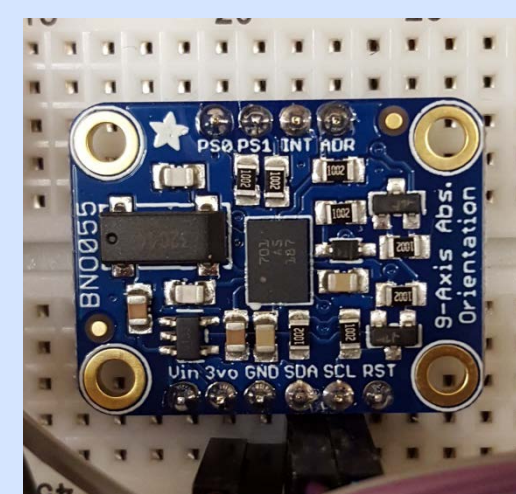
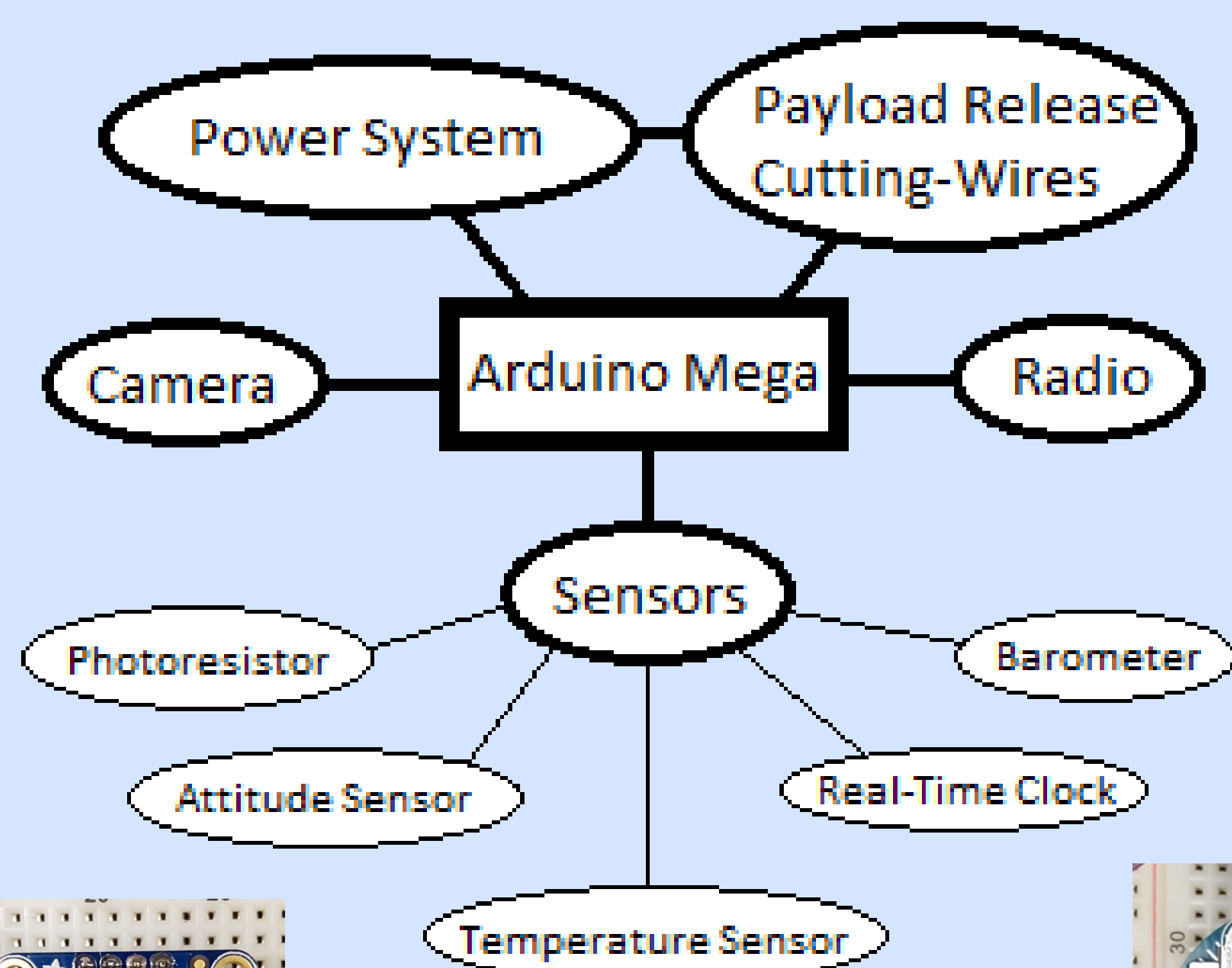


Abstract

The CoolerSat is a prototype intended to introduce new team members to the team structure, and to give the team experience as we move toward high-altitude balloon testing of components and subsystems in the summer. These components will eventually be flown on a mission to low earth orbit on a 1-U CubeSat.

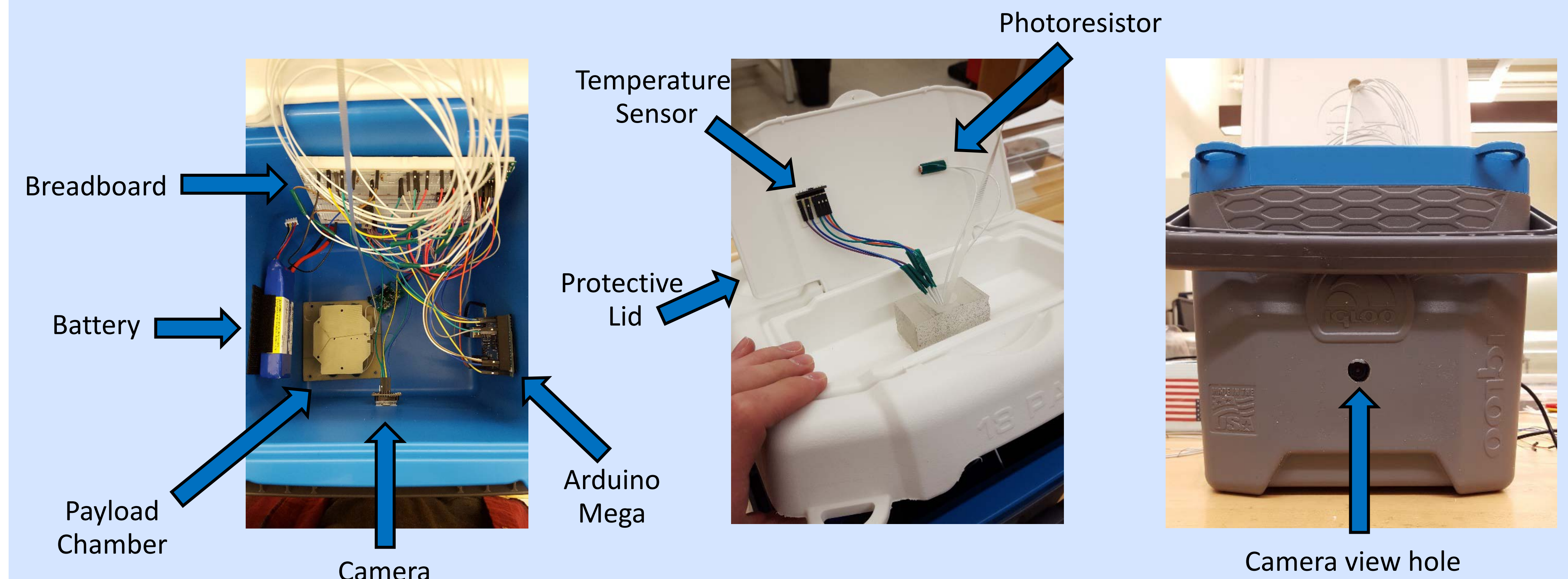
System Design

The CoolerSat system was designed to include many of the systems we plan to test this summer on high-altitude balloon flights.



Physical Layout

Below are pictures of the CoolerSat in various stages of development.



Results/Conclusions

The CoolerSat was left outside over a two-day period to autonomously collect and store data. The day/night cycles are obvious, and the temperatures reflect these cycles. Not shown is the graph of the outer temperature sensor data; this sensor, due to a programming bug, reported an almost-constant 42 degrees Fahrenheit for the majority of the two days.

The CoolerSat project was successful in that it displayed both good results and unexpected errors; it also taught the team how to work together and produce a working prototype. As time goes on, the CoolerSat platform will be used to test various components to prepare for the high-altitude-balloon flights planned for summer 2016. These flights will ultimately give the necessary experience to launch the GASPACS CubeSat project in the future.

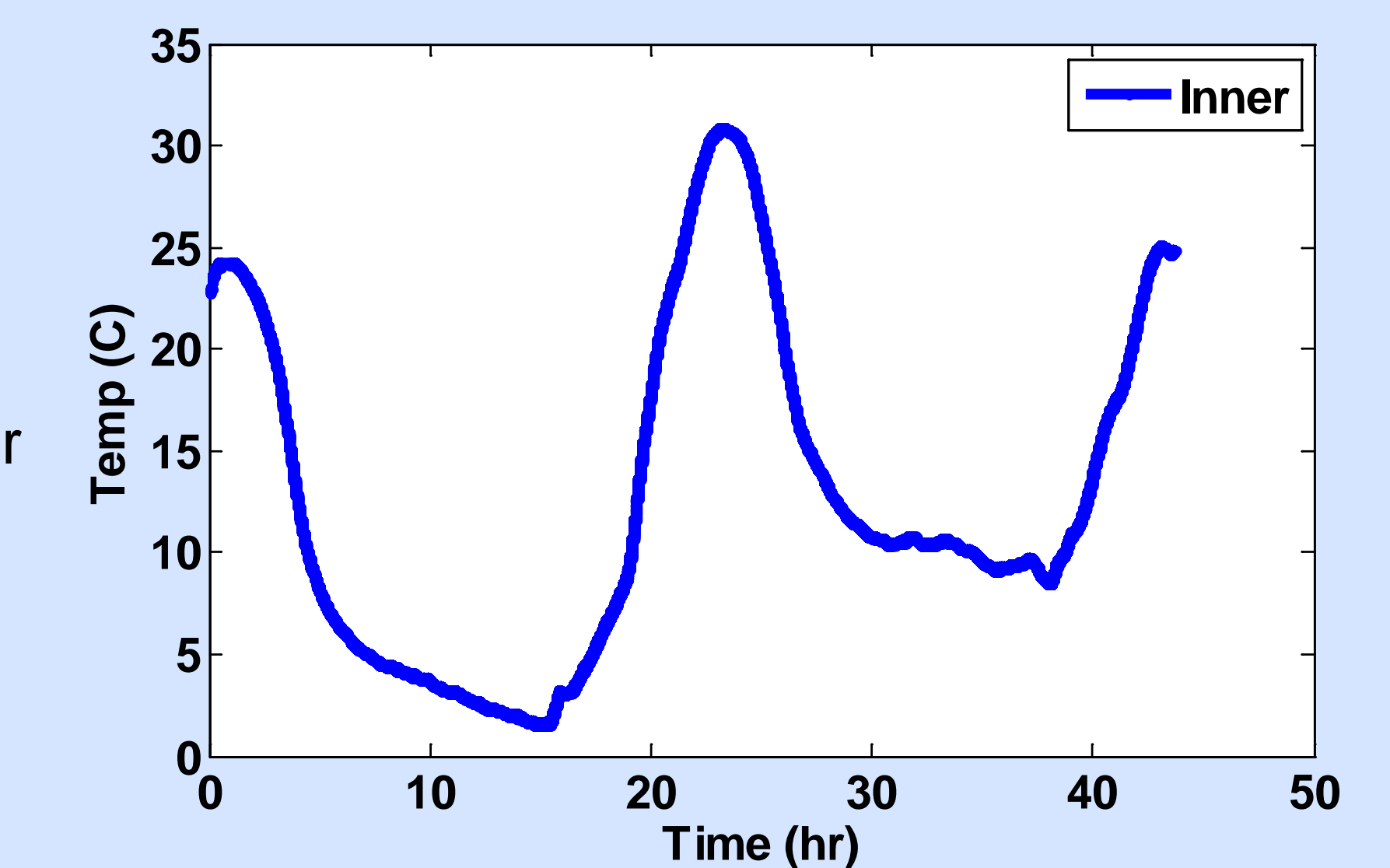
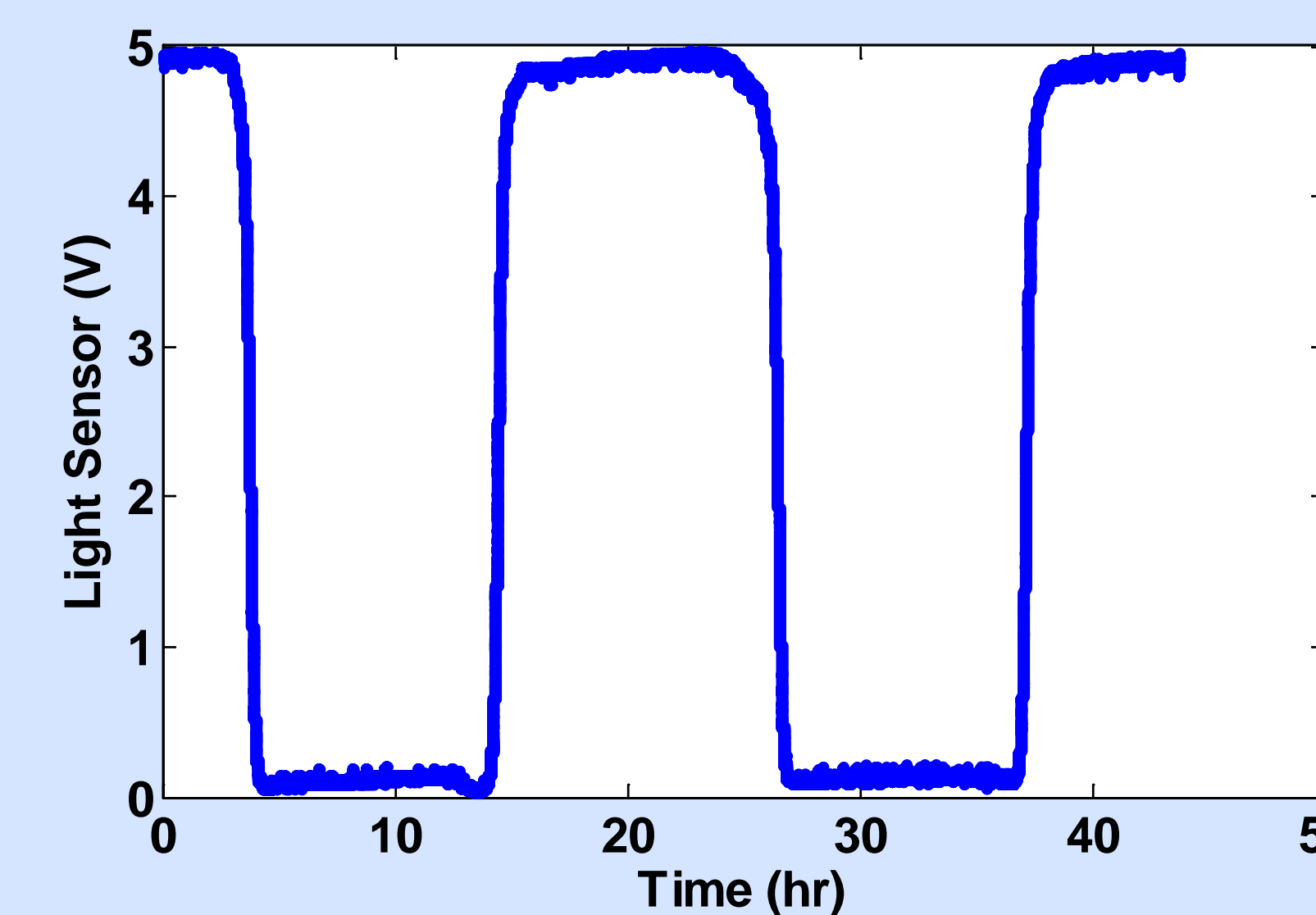


Fig. 1 & 2:
CoolerSat
Environment Sensor
Results

Acknowledgements

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