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NVSat: High-Altitude Ballooning

Keeping High-Resolutions Cameras Operational at 100,000'

Abstract:

The NVSat: High Altitude Ballooning UNR team is participating in the National Eclipse Ballooning Project (NEBP) to capture high-resolution photos and videos of solar eclipses from an altitude of 100,000 ft. However, the temperatures at max altitude (-60 °F) cause high-resolution cameras to turn off prematurely due to low battery voltage. To enable continuous recording during the flight, the team tested multiple camera configurations in various environments and found that insulating the camera with a ½" layer of foam increased thermal retention by over 3x. The addition of insulation kept operating temperatures around 70 °F warmer than the ambient temperature and enabled the cameras to record the entire duration of the four-hour test. This finding will inform the design of the team's equipment for the NEBP, allowing for successful capture of images and videos during the solar eclipses.