

## **CIBER2 Automated Optical Focus Calibration System**

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The Cosmic Infrared Background Experiment (CIBER1) was a sounding-rocket probe experiment created to study infrared background light from above the Earth's atmosphere. A vital aspect of this experiment was assuring that the detectors were placed accurately at the correct focal position of the instruments. In the CIBER1 focusing procedure, a knob and a micrometer turned by hand was used to adjust the focus position, an incredibly tedious and tiring process once repeated multiple times. This is the functionality I have been assigned to upgrade for CIBER2 measurements, automating the previously manual task and decreasing the time for the measurement from approximately 2 days to barely 2 hours. To implement this function, a precise, remotely controlled stepper motor to scan a pinhole through a collimator's focus was purchased, along with a relay device used to communicate with the CIBER2 data acquisition system. A Python program and GUI was written to control the Moonlite Mini Controller stepper motor and relay device, thus automating the movement for a scanner given a set of input parameters. While the scanning functionality is completed, my goal is to complete the data analysis module of the program by the end of the summer.