Designing the Balloon Experimental Twin Telescope for Infrared Interferometry

While infrared astronomy has revolutionized our understanding of galaxies, stars, and planets, further progress on major questions is stymied by the inescapable fact that the spatial resolution of single-aperture telescopes degrades at long wavelengths. The Balloon Experimental Twin Telescope for Infrared Interferometry (BETTII) is an 8-meter boom interferometer to operate in the FIR (30-90 μm) on a high altitude balloon. The long baseline will provide unprecedented angular resolution (~0.5″) in this band. In order for BETTII to be successful, the gondola must be designed carefully to provide a high level of stability with optics designed to send a collimated beam into the cryogenic instrument. We present results from the first 5 months of design effort for BETTII. Over this short period of time, we have made significant progress and are on track to complete the design of BETTII during this year.