

First Engineering Results from the First Micro-X Sounding Rocket Flight

Tuesday, 28 August 2018 15:45 (1 hour)

The Micro-X High Resolution Microcalorimeter X-Ray Imaging Rocket is a sounding rocket mission that launched on July 22, 2018. This was the first successful operation of Transition Edge Sensors (TESs) and SQUID Time-Division Multiplexing in space. This milestone demonstrates the flight readiness of these technologies and establishes a new type of detector for X-ray astronomy. Micro-X is designed to observe Supernova Remnants and BSM X-ray interactions, like those proposed from keV-scale sterile neutrino dark matter. This instrument combines the excellent energy resolution of TES microcalorimeters with the imaging capabilities of a conical imaging mirror to map extended and point X-ray sources with a unique combination of energy and spatial resolution. We present the engineering results of the first flight, with special emphasis on the successful performance of the cryostat and electronics within the challenging conditions of a sounding rocket flight. While a rocket pointing error led to minimal time on-target, the science instrument operated as expected, and data from this flight will be used to establish background flux limits and as calibration data in preparation for future flights.

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Session Classification: Poster Session and Coffee Break

Track Classification: Particle Physics