High Resolution Spectra of Supernova Remnants with the Micro-X Rocket Payload

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The 2013 flight of the Micro-X Sounding Rocket Payload will obtain the first broad-band high-resolution X-ray spectrum of the diffuse emission from a supernova remnant. Its 128-pixel Transition-Edge-Sensor array is coupled to a 300 cm^2 grazing-incidence optic with a bandpass between 0.2-3 keV. An energy resolution between 2-4 eV will provide the unprecedented ability to measure plasma properties on an element-by-element basis. Measurements of the temperature, bulk velocity, turbulence, and ionization equilibrium can be individually done for O, Ne, Fe, Mg, Si, and S. Spatial correlations in our 11.8 arcmin field of view can be made with our 2.4 arcmin imaging resolution. Our first target is the Bright Eastern Knot, a complex cloud-shock interaction region in the Puppis A supernova remnant. Other targets for future flights include a Si-rich ejecta region in Puppis A as well as the Cas A supernova remnant. In this talk we overview the science and present results from the integration tests of the payload as we prepare for our first flight.