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Expected Observations of the Active Solar X-ray Corona at 6-41Å with the *ATSSI* Microcalorimeter Sounding Rocket Payload

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The Advanced Technology Solar Spectroscopic Imager (*ATSSI*) sounding rocket payload will employ a new technology permitting true spectroheliograms to be recorded in the $\sim$ 6–41$\approx$ (300eV–2 keV) range. Implementation of this novel class of 3-D detector (in Energy, Time and Position), a *quantum microcalorimeter*, placed at the focus of a Wolter I grazing-incidence telescope, is the principal goal of the mission. Over a nominal 300 second period of observation, and with a cadence of $\leq$ 10 sec, a 2x2 array of detectors with $\sim$5 arc sec pixels, will record $\sim$120 spectra ($\sim$ 5000 cts each) with spectral resolution of $\sim$ 3eV (at 2keV, i.e. $E/\Delta E$ $\sim$667). Each spectrum will include emission lines of ions ranging from C V to S XVI, generated over the temperature range from $\sim$ 600,000 K to $\sim$ 6,300,000 K. Using these observations, the goal of the investigation will be to measure and determine non-thermal episodic heating mechanism(s) in coronal loops.