The Sun is a unique laboratory to study particle acceleration which occurs throughout the Universe. The Sun is the most energetic particle accelerator in the solar system.

HSD will propose FOXSI to the next Small Explorer opportunity to enable our first look into the acceleration region where energetic particles are generated.

New technology development (grazing-incidence optics and fast hard x-ray detectors) enable direct imaging of solar x-rays, a signature of accelerated electrons.

- **Sensitivity:** ~50 times previous missions (RHESSI)
- **Dynamic Range:** >10 times previous missions

**Heritage**

- FOXSI Sounding Rocket (Astro-H/NeXT detectors) (2 successful flights, Nov 2012, Dec 2014)
- GSFC/MSFC HEROES Balloon (1 flight, Sept 2013)
- GSFC Hard X-ray detector development currently funded by NASA APRA.
Background Information

• HEROES was a joint HOPE project between MSFC and GSFC which upgraded an existing telescope to observe the Sun in one year.
• FOXSI Rocket is headed by UCB Space Sciences Laboratory. Uses silicon-strip detectors developed for Astro-H.
• Both projects use high resolution optics developed by MSFC.
• GSFC Hard X-ray detector development currently funded by NASA APRA.
• Code 671 - Steven Christe (PI for HEROES, Co-I for FOXSI, PI for detector development, planned PI for SMEX AO)