

## The X-Ray Astronomy Recovery Mission

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The X-Ray Astronomy Recovery Mission (XARM), an international collaboration led by JAXA and involving major participation from NASA and ESA, will employ an advanced X-ray observatory with capabilities to carry out a science program to address some of the important questions of present-day astrophysics. XARM is essentially a rebuild of the the Hitomi (Astro-H) spacecraft that was lost due to an operational mishap early in the mission in 2016, but only employs two of the original four instruments on Hitomi. The Resolve Soft X-ray Spectrometer is being developed jointly by a team led by NASA/GSFC and institutions in Japan under the direction of JAXA's Institute of Space and Astronautical Science. It is a high-resolution, non-dispersive X-ray spectrometer operating between 0.3-12 keV. It is the core instrument on XARM, providing a high-resolution spectroscopic capability ( $\sim 5$  eV) for the mission and covering the energy band where all of the astrophysically abundant elements have characteristic emission lines that can be used for a wide range of spectral studies of matter under extreme conditions. The other instrument, called Xtend and provided by JAXA, extends the field of view to produce an observatory with extraordinary capabilities using a state of the art X-ray charged couple device camera. Xtend is the responsibility of JAXA, but NASA will provide an X-ray Mirror Assembly for the instrument identical in design to the Resolve mirror assembly. XARM will be launched into low-Earth orbit (nominally 575 km circular,  $31^\circ$  inclination) from the Tanegashima Space Center, Japan, using a JAXA H-IIA rocket. This talk will summarize the status of the mission, and will outline the science objectives to be addressed, namely: 1) structure formation of the Universe and evolution of clusters of galaxies; 2) the life cycle of baryonic matter in the universe; 3) evolution and feedback from black holes; and 4) new science achieved through unprecedented high resolution X-ray spectroscopy.

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