

AXSIO and the NASA X-ray Mission Concept Study

The Advanced X-ray Spectroscopy and Imaging Observatory (AXSIO) focuses on the IXO science objectives ranked highly by the Decadal Survey: tracing orbits near SMBH event horizons, measuring BH spin, characterizing outflows and the environment of AGN, observing SMBH to $z=6$, mapping gas motion in clusters, finding the missing baryons, and observing cosmic feedback. AXSIO's streamlining of IXO includes reduction in the instrument complement to a calorimeter and a grating spectrometer, and relaxation of the angular resolution to $10''$. With 0.9 m^2 effective area at 1.25 keV, AXSIO delivers a 30-fold performance increase over current missions for high-resolution spectroscopy and spectroscopic timing.

NASA has also undertaken a study of notional missions to determine lower cost approaches to accomplishing IXO objectives over the next decade. Three concepts were studied, which as a group encompass the full range of IXO science. The capabilities and architecture of these missions are summarized.