The High Energy X-Ray Probe (HEX-P):
Probing the power of accreting compact objects

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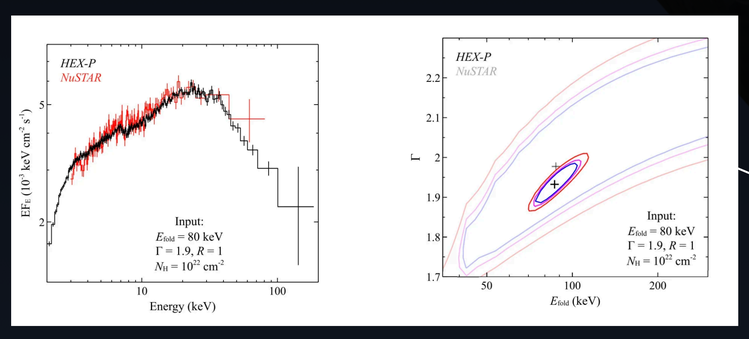
Overview:

HEX-P is a probe-class mission concept that will combine high spatial resolution X-ray imaging (<10 arcsec FWHM) and broad spectral coverage (0.1-150 keV) with an effective area far superior to current facilities (including XMM-Newton and NuSTAR), to enable revolutionary new insights into a variety of important astrophysical problems. Given their copious emissions in the X-ray band, accreting compact objects are some of the primary targets of HEX-P. We present a broad range of new exciting science that will be accessed by exploiting the superior capabilities of HEX-P's design. This includes studies of spin distributions for supermassive and stellar-mass black holes (including ultraluminous X-ray sources); accreting neutron stars, their magnetic fields and equations of state; characterization of tidal disruption events in X-rays; broadband spectroscopy of blazars; and spectral-timing analysis in general. More information on HEX-P, including the full team list, is available at https://hexp.org.

Physics of the X-ray Corona

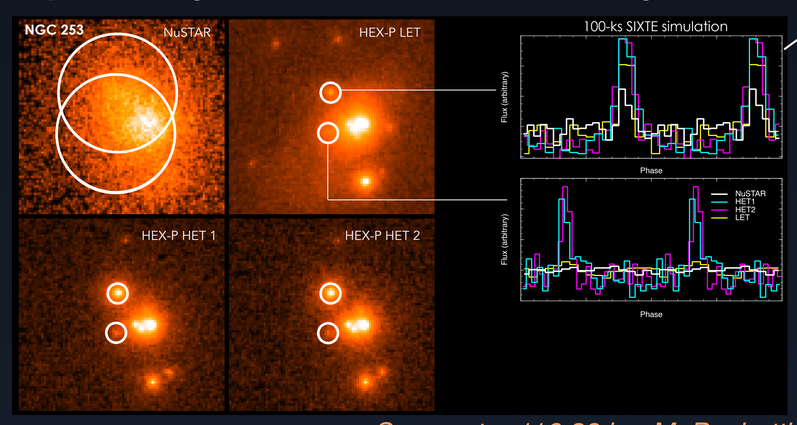
Accurate constraints on coronal properties (temperature & optical depth) for relatively faint sources



See poster 108.01 by D. Wilkins

Detection of Pulsations

HEX-P will measure pulsations otherwise undetectable by NuSTAR, owing to its larger effective area and improved angular resolution (i.e., lower background)

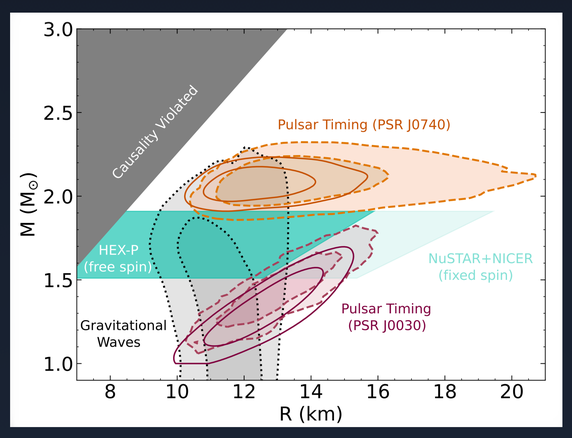


See poster 116.38 by M. Bachetti

Broad-band spectroscopy combined with a large effective area and low background provides an excellent tool to probe accretion onto compact objects

Neutron Stars Radius Constraints

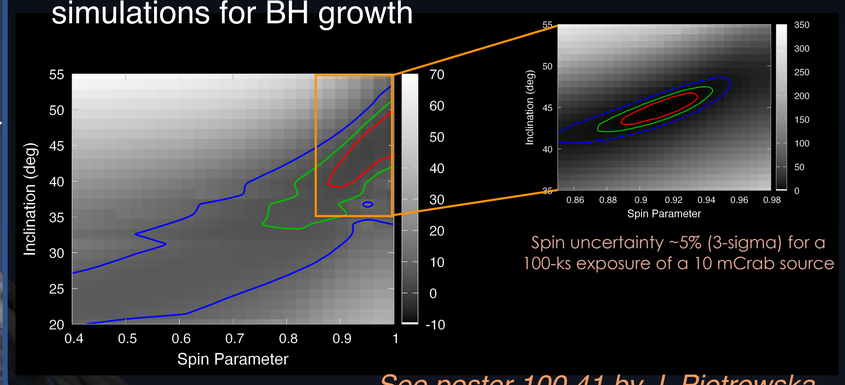
HEX-P provides high S/N enough to independently constrain the inner disk radius and spin parameter, pushing down the upper limit on the NS radius by >2 km



See poster 116.39 by R. Ludlam

Black Hole Spin Measurements

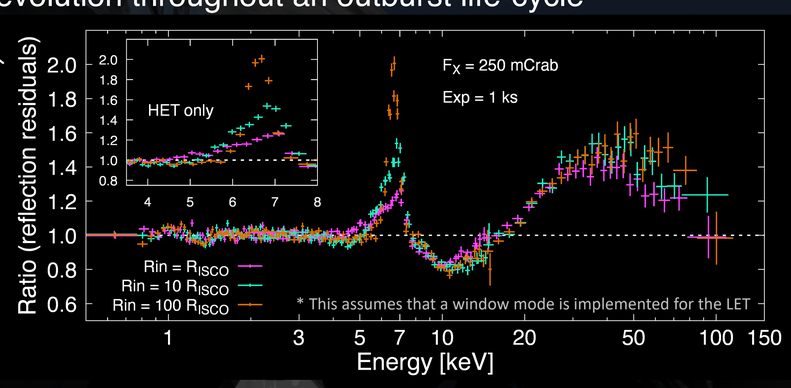
HEX-P will measure the spin of SMBHs at unprecedented precision. A statistically significant distribution of spins will constrain cosmological simulations for BH growth



See poster 100.41 by J. Piotrowska

Accretion Disk Truncation

HEX-P will measure the inner-disk radius via reflection spectroscopy with relatively short exposures, probing its evolution throughout an outburst life-cycle



See poster 116.105 by R. Connors

Do you have ideas for how HEX-P would revolutionize your science? Get in touch!

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Complete List of Posters in HEX-P's Accretion Pillar:

* *AGN (108.01) — D. Wilkins*
* *SMBH Spins (100.41) — J. Piotrowska*
* *BHBs (116.105) — R. Connors*
* *Coronal Geometry (116.93) — N. Rodriguez*
* *Disk Tearing (116.92) — A. West*
* *Disk Truncation (108.02) — P. Draghis*
* *Neutron Stars (116.39) — R. Ludlam*
* *ULXs (116.38) — M. Bachetti*
* *Blazars (100.46) — L. Marcotulli*
* *TDEs (103.46) — S. Gezari*
* *Spectral-Timing (103.54) — G. Mastroserio*

HEX-P
HIGH ENERGY X-RAY PROBE

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