H/LETG — Status

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Ongoing HETG Team Activities Summary

HETG/ACIS-S Performance (April 2017 — September 2017); 1324 ks
• 38 HETG observations on 16 targets (17/21 GO/GTO observations)
• 3 HETG Cal observations

LETG Performance (April 2017 — September 2017); 488 ks
• 5 LETG/HRC-S observations, 2 targets (1/4 GO/GTO, 200 ks)
• 5 LETG/HRC-S Cal
• 7 LETG/ACIS-S Cal
• 1 LETG/HRC-I Cal

Grating performance is nominal.

TGCat has 1784 extractions for 469 objects (+55/+8 since last report)
Total volume: 405 GB

http://tgcat.mit.edu
HETG Team Activities

GTO Science Program, HETG/ACIS-S

Cycle 18:

★ ULX/BH: NGC 1313 X-1 253/500 ks Ultra-luminous source outflow: absorption, emission lines
★ NS/BH: GRS 1915+105 97 ks Black hole accretion, line variability
★ XRB: 4U 1626-67 0/50 ks Neutron star accretion; Fe K absorption variability
★ NS: Terzan 5 X-2 0/200 ks (untriggered) TOO (10%); Neutron Star Equation of State
★ LIGO/GW: GW2017nnnn 0/300 ks (untriggered) TOO (10%); Gravitational wave transient

Cycle 19:

★ AGN: Fairall 51 240 ks Seyfert 1, warm absorber variability (w/ NuSTAR 120 ks)
★ HMXB: 4U 1907+09 145 ks Accreting neutron star; wind emission, absorption lines
★ Stars: V773 Tau 140 ks Evolution of pre-MS stars; flares (w/ NuSTAR 150 ks)
★ ISM: 4U 1636-53 140 ks Si, Fe absorption edges; part of survey vs NH
★ NS: Terzan 5 X-2 200 ks TOO (10%); Neutron Star Equation of State
★ LIGO/GW: GW2018nnnn 300 ks TOO (10%); Gravitational wave transient

Postdoc status/activities:

Dr. Rozenn Boissay, since Feb 2017 (Ph.D. U. Geneva, May 2016)
Dr. Paul Hemphill, since Oct 2016 (Ph.D. UCSD, August 2016) [partial GTO support]
Dr. David Principe, since Nov 2016 (mainly GO support; involved in HETG/GTO program)
LETG Team Activities

LETG/GTO Science Program

Cycle 18:
★ AGN: (Kaastra/SRON) IC 4329a 174 ks Neutral, warm absorbers (HETG/ACIS)
★ Stars: (Predehl/MPE) Proxima Cen 166 ks Reference spectrum of an old M-dwarf (LETG/HRC)

Cycle 19:
★ NS: (Predehl/MPE) RX J2143.0+0654 175 ks Cyclotron Absorption Line in an Isolated Neutron Star (LETG/HRC)
★ Gal: (Kaastra/SRON) 1E 2216/1E 2215 145 ks Shocks in Galaxy Cluster Collisions (ACIS-I)
★ ISM: (Kaastra/SRON) 4U 1608-522 30 ks Astro-silicates through Mg and Si K-edges (HETG/ACIS)
HETG Trends: Streak Width

FWHM of HETG Streak Core vs Time (TGCat processed)

“Ave FWHM = 29.19 +/- 0.1 um
Chi^2 / (N−1) = 2.57 [1um min err]

HETG; Chandra Quarterly #44, 4 Oct 2017

(Analysis by Herman Marshall)
Multiple absorption features (other than from Fe) have been resolved by HETG in the neutron star binary, GX 13+1. They reveal multiple ionization zones in the outflow, with velocities of about 700 km/s.
Ultra-compact system: Neutron star plus white dwarf in binary with orbital period of 41 minutes. The neutron star is a pulsar with a period of 7.7 s.

Ne X disk line, 2010 vs. 2016 — little change.

Fe K fluorescence emission line appeared in 2010 after a torque reversal episode, and is gone in 2016.

(Analysis by Norbert Schulz, Paul Hemphill, Herman Marshall, Deepto Chakrabarti)