Supplementary Material

This document contains tables that did not fit in the main text of our paper.

1 SUPPLEMENTARY TABLES

Acronym	Meaning
AGN	active galactic nucleus
BH	black hole
BH-LMXB	black hole low-mass X-ray binary
CHXE	central hard X-ray emission
CMZ	Central Molecular Zone
CR	cosmic ray
CV	cataclysmic variable
FOV	field of view
FSCV	fast-spinning cataclysmic variable
GC	Galactic center
GRXE	Galactic ridge X-ray emission
HET	High Energy Telescope
HEX-P	High Energy X-ray Probe
HVS	hypervelocity star
IP	intermediate polar
IR	infrared
LECR	low energy cosmic rays
LET	Low Energy Telescope
LLIP	low-luminosity intermediate polar
LMXB	low-mass X-ray binary
LW	limiting window
MC	molecular cloud
mCV	magnetic CV
NIR	near infrared
NS	neutron star
NS-LMXB	neutron star low-mass X-ray binary
NSC	nuclear star cluster
pc	parsec
PMS	pre-main sequence
PSF	point spread function
PWN	pulsar wind nebula
SED	spectral energy distribution
SMBH	supermassive black hole
SNIa	type Ia supernova
SNR	supernova remnant
ToO	target of opportunity
VFXT	very faint X-ray transient
WD	white dwarf
XRB	X-ray binary
YSO	young stellar object

Table S1. List of acronyms used in this paper, along with their meanings.

Table S2. *HEX-P*'s sensitivity limits for detecting and characterizing X-ray sources in the GC.

Goals	Measurement criteria	$L_X^{\rm min}$ [erg s^{-1}]*
Source classification	Hardness ratio (3-10 vs 10-40 keV) with $< 20\%$ error	1×10^{32}
Source identification	Discerning between thermal and PL spectra with $> 4\sigma$ significance	3×10^{32}
Parameter determination	kT and Γ with 20% error	8×10^{32}
Variability detection	X-ray flux with $< 10\%$ error	1×10^{32}
Periodicity detection ($P \gtrsim 1$ hr)	$> 4\sigma$ significance	3×10^{32}
Periodicity detection ($P \lesssim 1$ sec)	$> 4\sigma$ significance	TBD

* The column labeled by $L_X^{\rm min}$ refers to the X-ray luminosity above which the measurement criteria will be met. We assumed 100 ks exposure per field for estimating the limiting $L_X^{\rm min}$ values based on XSPEC simulations.

Table S3. The filaments incorporated in the GC simulations described in Sections 5.4 and 8.2. While best-fit values from current observations are very poorly constrained, *HEX-P* will be able to measure their spectral properties with much better sensitivity (Section 8.2).

Label	Name	$N_{\rm H}$[a] [10^{22} cm^{-2}]	Γ[a]	Flux (2-10 keV) [erg cm^{-2} s^{-1}]
f1	G359.97-0.038	$11.7^{+5.1}_{-1.9}$	$1.4^{+0.8}_{-0.3}$	1.1×10^{-13}
f2	G359.964-0.052	$11.1^{+2.4}_{-1.5}$	$1.9^{+0.5}_{-0.3}$	2.3×10^{-13}
f3	G359.95-0.04[b]	$6.0^{+2.0}_{-1.0}$ (12)	$1.8^{+0.3}_{-0.2}$	6.0×10^{-13}
f4	G359.889-0.081 (Sgr A-E)	$31.4^{+5.4}_{-2.0}$	$1.3^{+0.6}_{-0.2}$	4.7×10^{-13}
f5	G0.029-0.06	$6.3^{+1.9}_{-2.8}$	$1.1^{+0.4}_{-0.4}$	1.2×10^{-13}
f6	G0.017-0.044	$0.0^{+22.0}_{-0.0}$ (12)	$-0.7^{+3.0}_{-6.0}$ (2)	4.0×10^{-14}
f7	G0.007-0.014	$5.7^{+16.8}_{-5.7}$	$1^{+3.4}_{-1.7}$	2.0×10^{-14}
f8	G359.97-0.009	$9.6^{+8.8}_{-5.4}$	$1.2^{+0.7}_{-0.6}$	4.0×10^{-14}
f9	G359.96-0.028	$7.2^{+4.5}_{-3.2}$	$0.9^{+0.6}_{-0.4}$	5.0×10^{-14}
f10	G359.942-0.03	$58.8^{+32.8}_{-32.8}$ (12)	$4.1^{+3.0}_{-2.4}$ (2)	2.0×10^{-14}
f11	G359.94-0.05	$-0.0^{+9.3}_{-0.0}$ (12)	$-0.4^{+1.4}_{-1.0}$ (1)	3.0×10^{-14}
f12	G359.933-0.037	$8.3^{+5.8}_{-4.2}$	$0.7^{+0.4}_{-0.5}$	5.0×10^{-14}

[a] Best-fit parameters from Johnson et al. (2009) were used to model the filaments in our simulation, except for f3 (as described below), and for f6, f10, and f11, for which we used the values indicated in parenthesis. This was done because of the exceptionally poor constraints and improbable best-fit values given for those filaments.

[b] The PWN G359.95-0.04 and its central pulsar were modeled separately for our simulations, assuming an absorbed power-law with $N_{\rm H} = 12$, and $\Gamma = 2.0$ and 1.5, respectively. These values are based on analysis by Wang et al. (2006).

REFERENCES

Johnson, S. P., Dong, H., and Wang, Q. D. (2009). A Large Scale Survey of X-Ray Filaments in the Galactic Center. *Monthly Notices of the Royal Astronomical Society* 399, 1429–1440. doi:10.1111/j.1365-2966.2009.15362.x

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