Supplementary Material

1 SUPPLEMENTARY TABLES

Here we provide the input values used for creating the various *HEX-P* simulations that are presented in the accompanying manuscript. Additionally, we specify the flux levels of the simulations since the introduction mentions a pile-up limit for the LET in units of mCrab.

Table S1. Flux level for each *HEX-P* simulation based on different source cases.

Source	Type	$F_{2-10\,\mathrm{keV}}$ (mCrab)	$F_{2-80\,\mathrm{keV}}$ (erg cm^{-2} s^{-1})
4U 1735−44	LMXB, atoll	61	2.0×10^{-9}
Cygnus X-2	LMXB, Z	763	2.1×10^{-8}
Cen X-3	HMXB	36	1.0×10^{-8}
Vela X-1	HMXB	120	6.7×10^{-9}
GX 304−1	HMXB, Be XRB	0.4	1.2×10^{-11}
SMC X-2	HMXB, extragalactic	2-8.3	2-8$\times 10^{-10}$

Table S2. Input spectral parameters for the two continuum models used to demonstrate *HEX-P*'s capabilities to distinguish continuum shapes in NS LMXBs in section 2.2.1. The int_type parameter of NTHCOMP in Model 2 is set to 0 so that the seed photons come from a single-temperature blackbody.

	Model 1			Model 2	
Model	Parameter	Value	Model	Parameter	Value
TBABS	N_H (10^{22} cm^{-2})	0.4	TBABS	N_H (10^{22} cm^{-2})	0.4
DISKBB	kT (keV)	1.26	DISKBB	kT (keV)	0.68
	norm	28		norm	350
BBODY	kT (keV)	2.43	NTHCOMP	Γ	1.97
	norm	1.02×10^{-2}		kT_e (keV)	3.13
POW	Γ	2.57		kT_bb (keV)	1.07
	norm	0.45		norm	5.9×10^{-2}

Table S3. Spectral parameters for the Vela X-1 simulations, see also Figure 9. The model can be written as `tbabs(2)*((powerlaw(1)*fdcut(1))*gabs(1)*gabs(2)+ +egauss(1)+egauss(3)+egauss(10)+egauss(11)+egauss(12)+egauss(13)+ +egauss(100))*(constant(10)*tbabs(1)+(1-constant(10)))`.

Parameter	Value	Unit
$N_{\mathrm{H},1}$	0.37	$10^{22}\,\mathrm{cm}^{-2}$
Normalization	0.33	$\mathrm{ph\,keV}^{-1}\,\mathrm{cm}^{-2}\,\mathrm{s}{-1}$ at 1 keV
Γ	1.08	
E_{fold}	26.1	keV
E_{cut}	10.2	keV
$E_{\mathrm{CRSF,2}}$	56.8	keV
$\sigma_{\mathrm{CRSF,2}}$	8.75	keV
$d_{\mathrm{CRSF,2}}$	21.7	
$E_{\mathrm{CRSF,1}}$	24.3	keV
$\sigma_{\mathrm{CRSF,2}}$	4.37	keV
$d_{\mathrm{CRSF,2}}$	0.49	
$A_{\mathrm{Fe\ K}\alpha}$	5.83	$10^{-3}\,\mathrm{ph\,s}^{-1}\,\mathrm{cm}^{-2}$
$E_{\mathrm{Fe\ K}\alpha}$	6.49	keV
$\sigma_{\mathrm{Fe\ K}\alpha}$	0.08	keV
$A_{\mathrm{Fe\ K}\beta}$	2.45	eV
$E_{\mathrm{Fe\ K}\beta}$	7.14	keV
$\sigma_{\mathrm{Fe\ K}\beta}$	0.09	keV
$A_{\mathrm{Ne\ IX}\alpha}$	3.58	$10^{-3}\,\mathrm{ph\,s}^{-1}\,\mathrm{cm}^{-2}$
$E_{\mathrm{Ne\ IX}\alpha}$	0.93	keV
$\sigma_{\mathrm{Ne\ IX}\alpha}$	0.10	keV
$A_{\mathrm{Mg\ L}\alpha}$	1.95	$10^{-3}\,\mathrm{ph\,s}^{-1}\,\mathrm{cm}^{-2}$
$E_{\mathrm{Mg\ L}\alpha}$	1.34	keV
$\sigma_{\mathrm{Mg\ L}\alpha}$	0.10	keV
$A_{\mathrm{Si\ K}\alpha}$	5.74	$10^{-4}\,\mathrm{ph\,s}^{-1}\,\mathrm{cm}^{-2}$
$E_{\mathrm{Si\ K}\alpha}$	1.83	keV
$\sigma_{\mathrm{Si\ K}\alpha}$	15.5	eV
$A_{\mathrm{S\ K}\alpha}$	4.97	$10^{-4}\,\mathrm{ph\,s}^{-1}\,\mathrm{cm}^{-2}$
$E_{\mathrm{S\ K}\alpha}$	2.44	keV
$\sigma_{\mathrm{S\ K}\alpha}$	0.05	keV
Cov. Frac.	0.50	
$N_{\mathrm{H},2}$	32.1	$10^{22}\,\mathrm{cm}^{-2}$
A_{10keV}	-1.25	$10^{-2}\,\mathrm{ph\,s}^{-1}\,\mathrm{cm}^{-2}$
E_{10keV}	9.13	keV
σ_{10keV}	2.34	keV