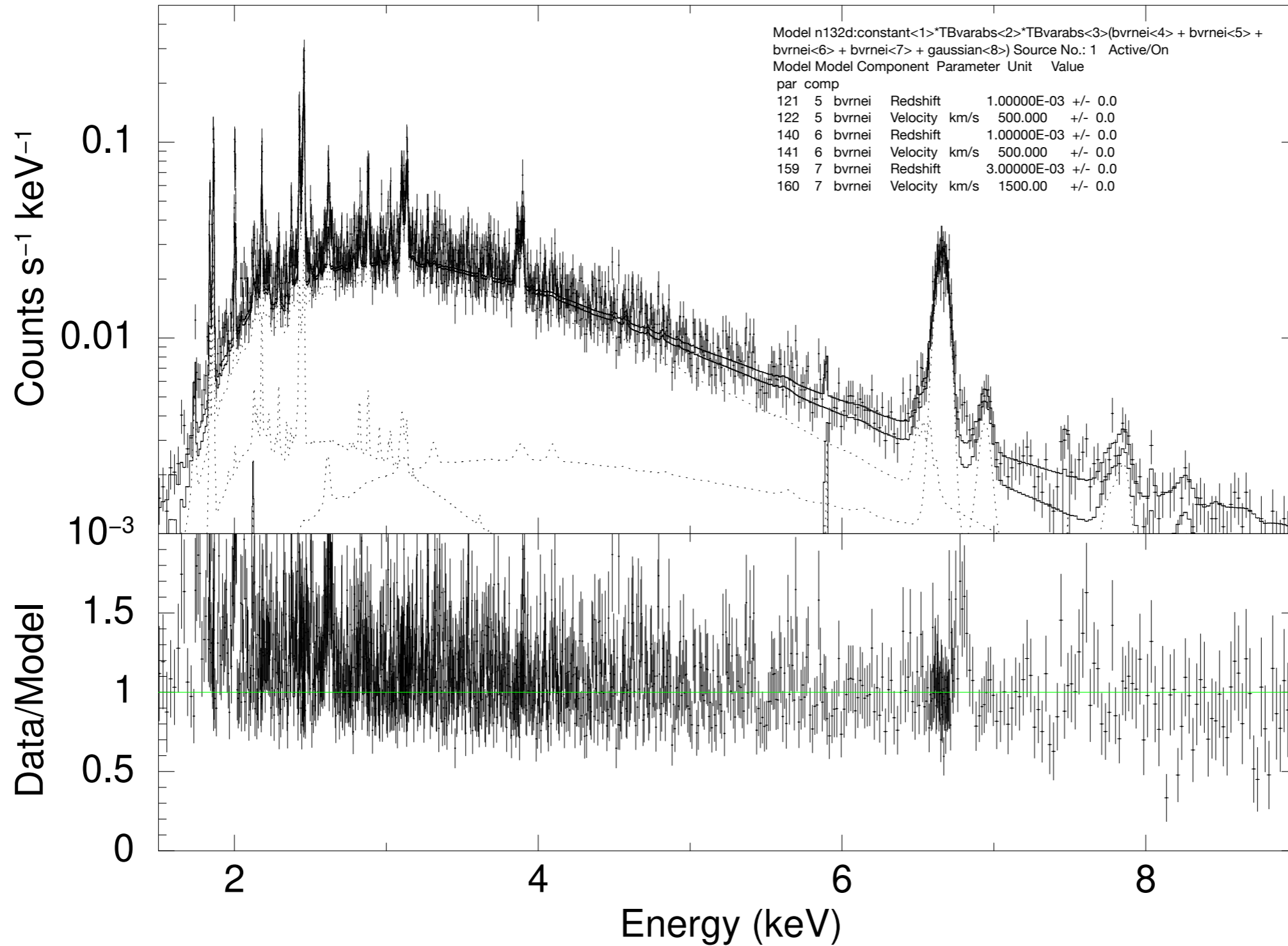


N132D

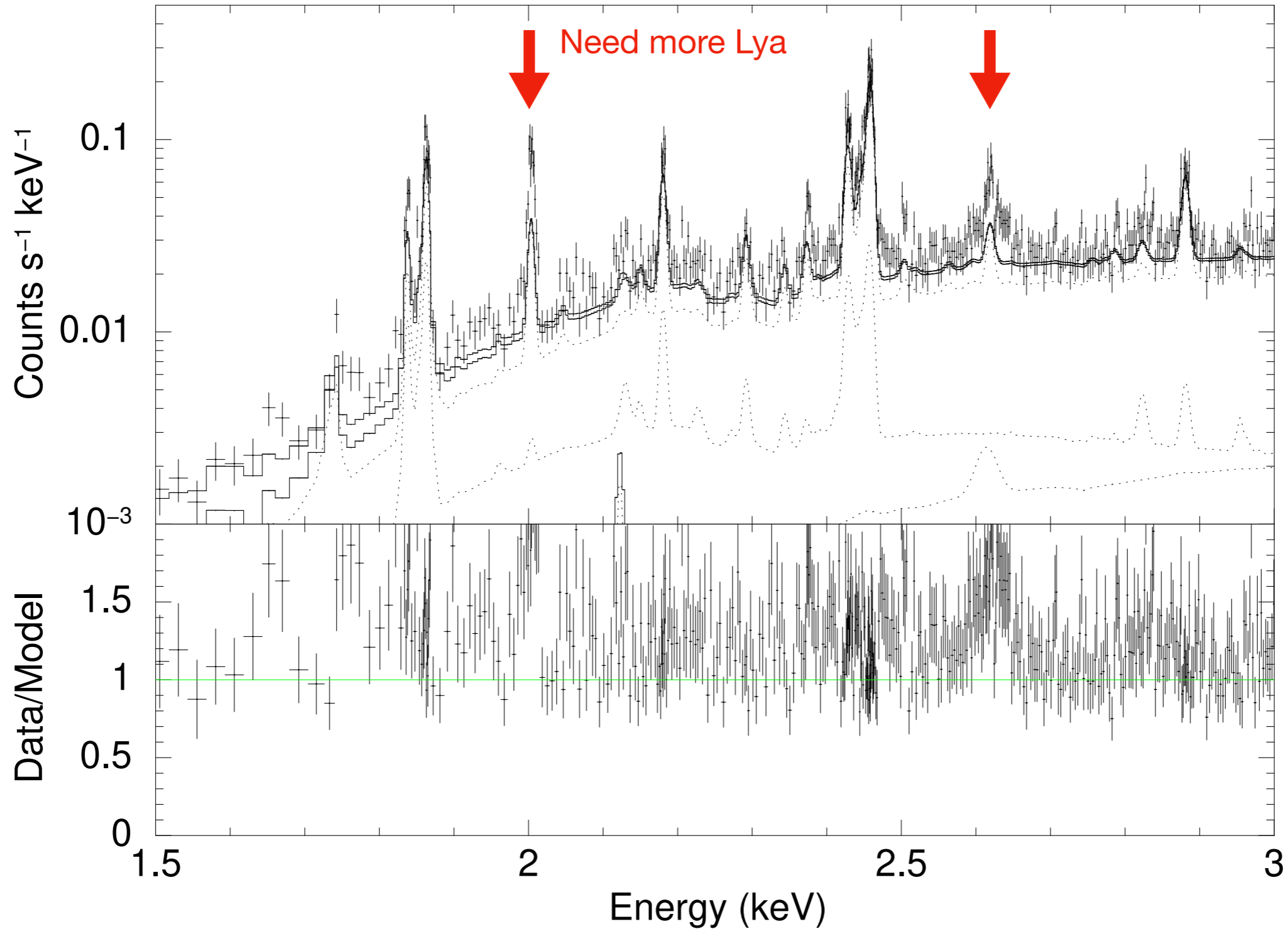
N132D

- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. n132d_afoster_suzuki_vrnei_20210420_broad_tied.mdl
 - broadening & redshift + Ca abund. adjusted



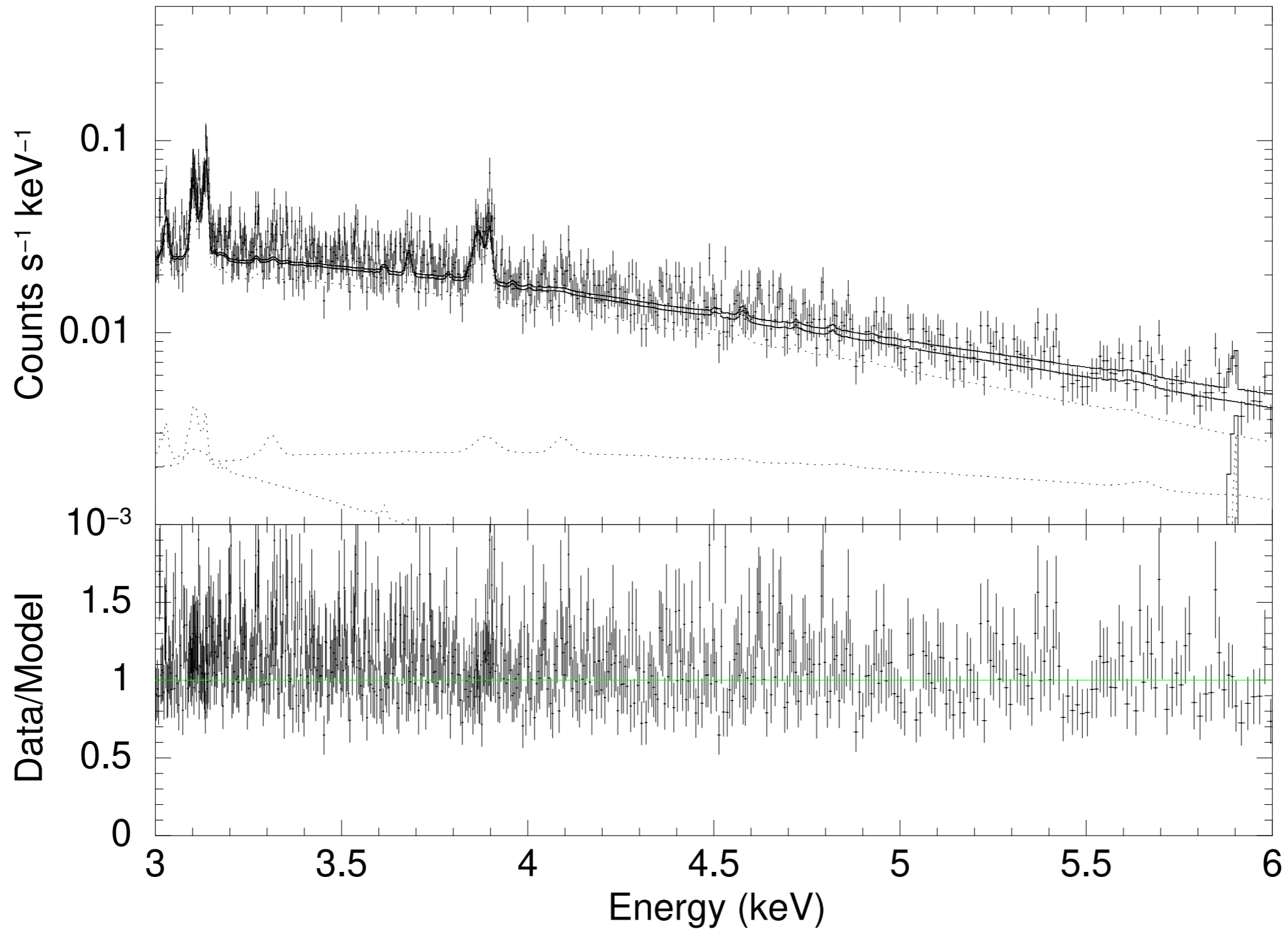
N132D

- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. n132d_afoster_suzuki_vrnei_20210420_broad_tied.mdl
 - broadening & redshift + Ca abund. adjusted



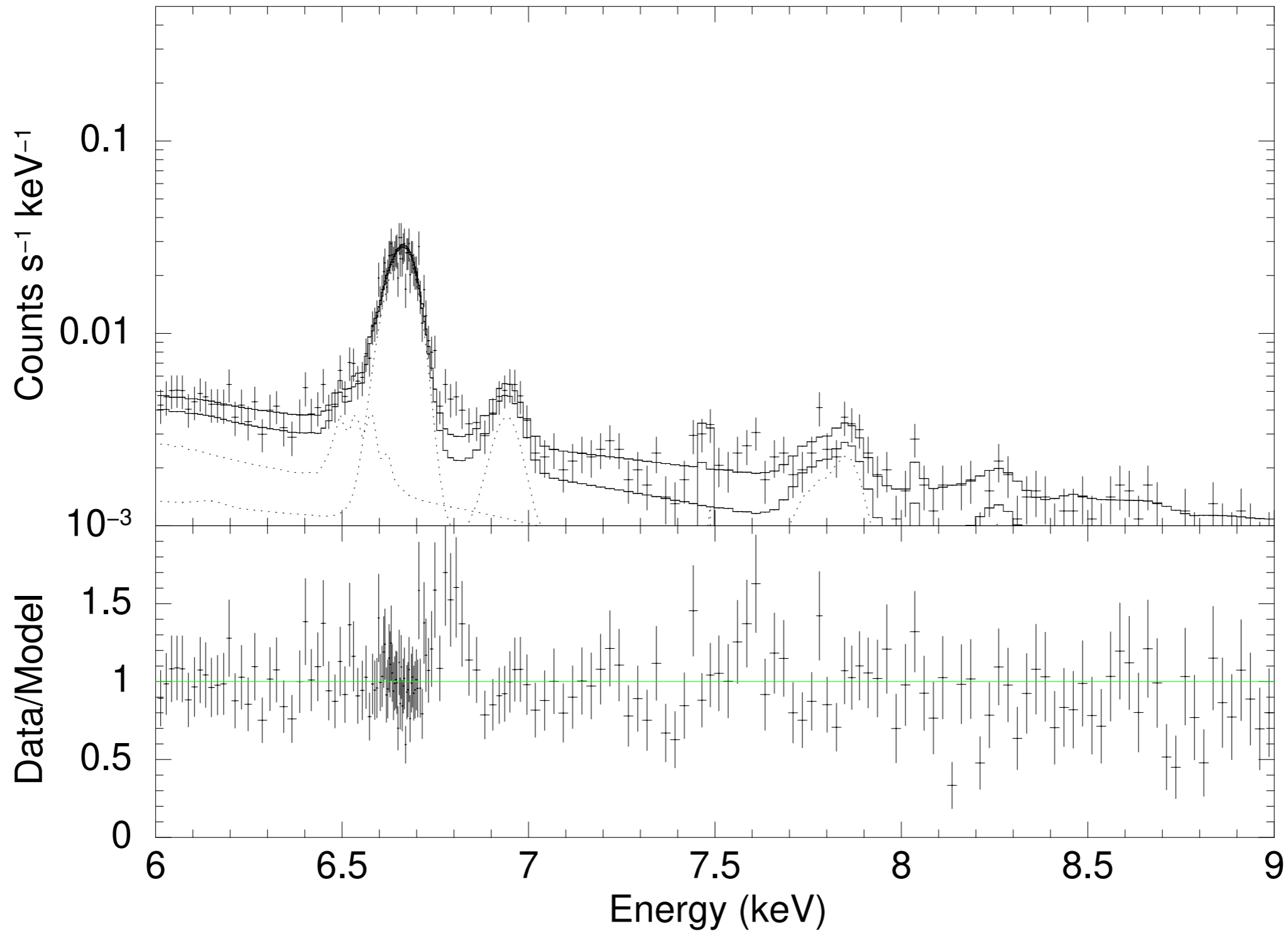
N132D

- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. n132d_afoster_suzuki_vrnei_20210420_broad_tied.mdl
 - broadening & redshift + Ca abund. adjusted



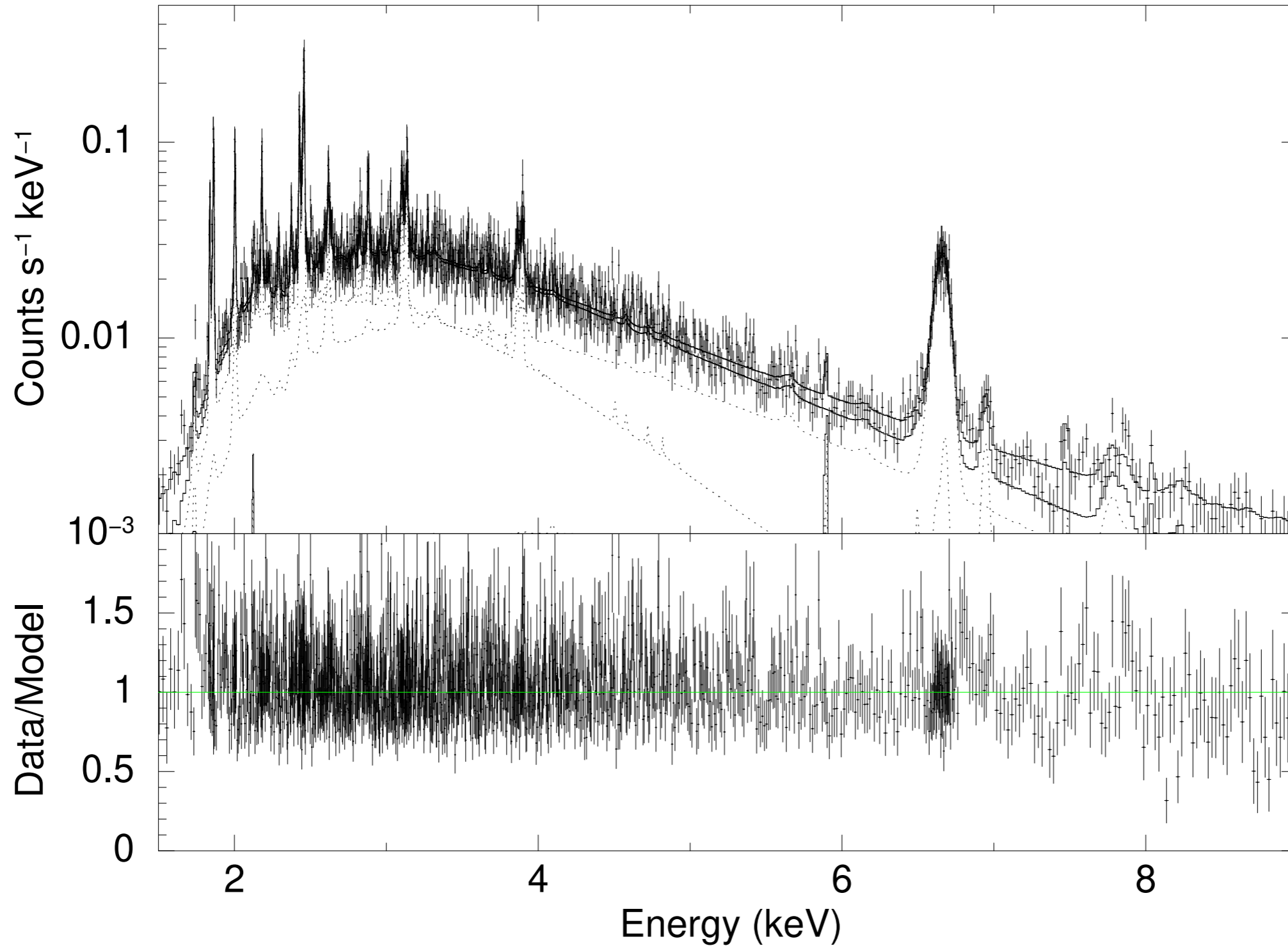
N132D

- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. n132d_afoster_suzuki_vrnei_20210420_broad_tied.mdl
 - broadening & redshift + Ca abund. adjusted



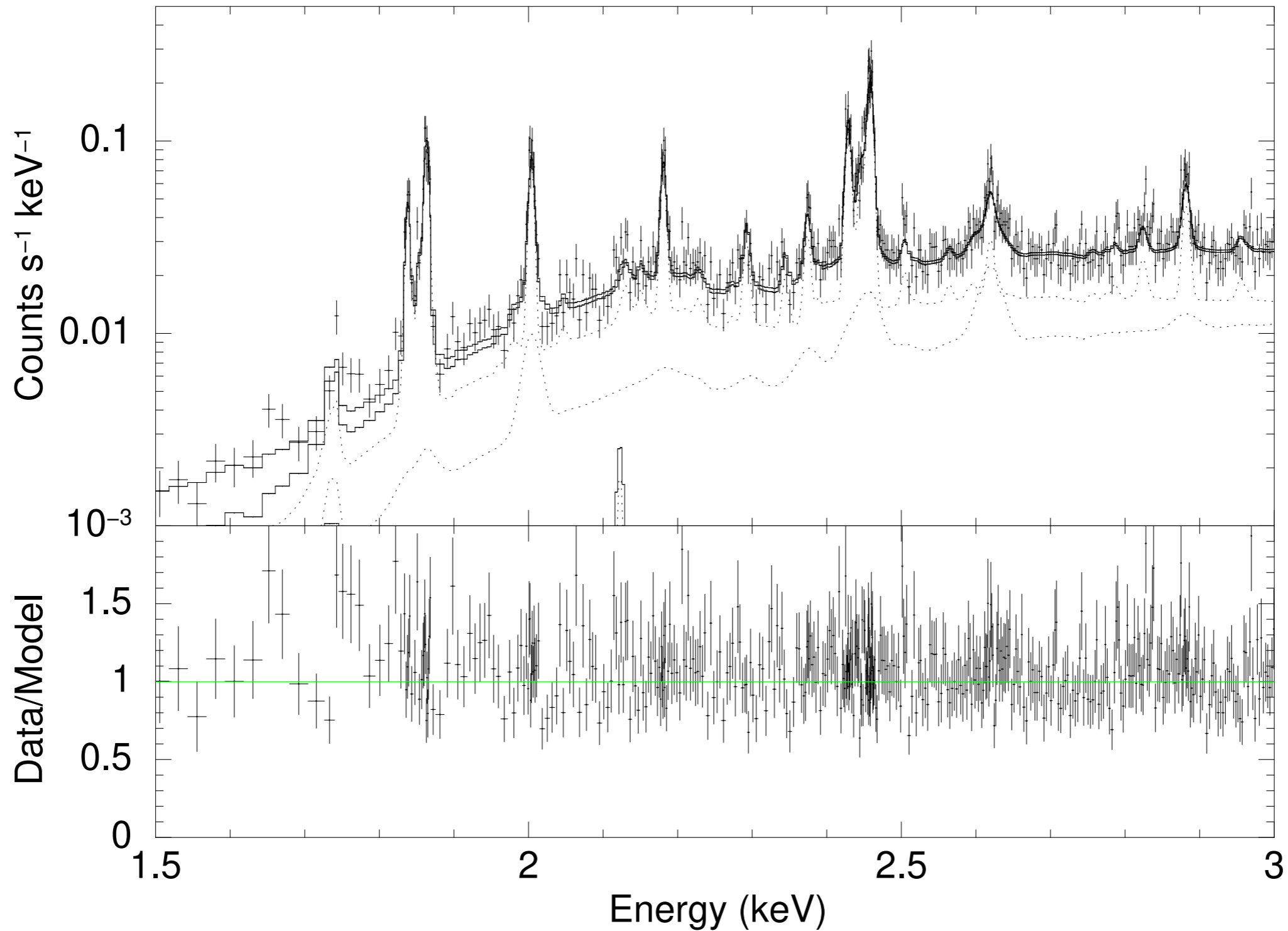
N132D

- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. XRISM Collaboration 2024 model
 - original parameters



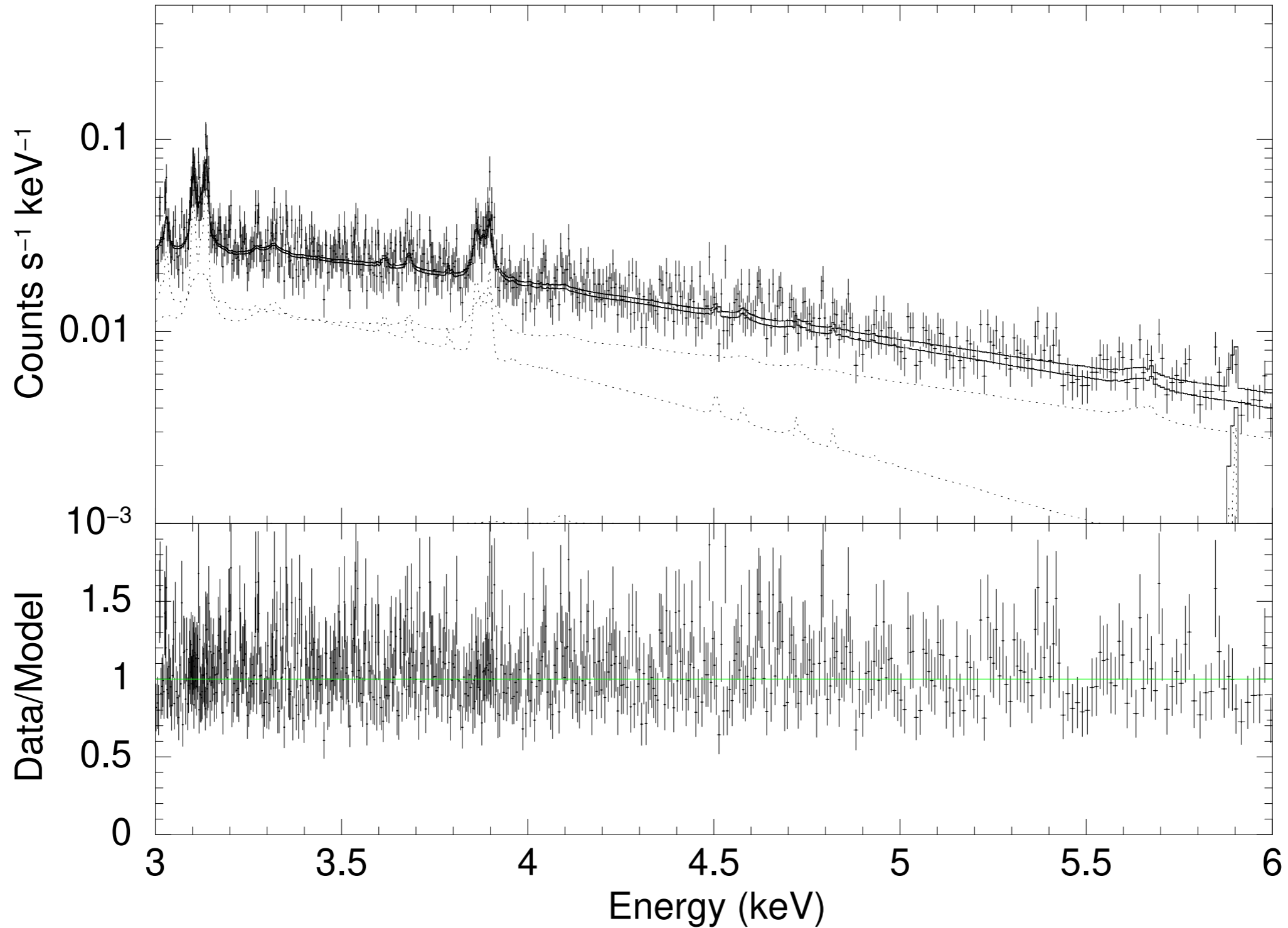
N132D

- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. XRISM Collaboration 2024 model
 - original parameters



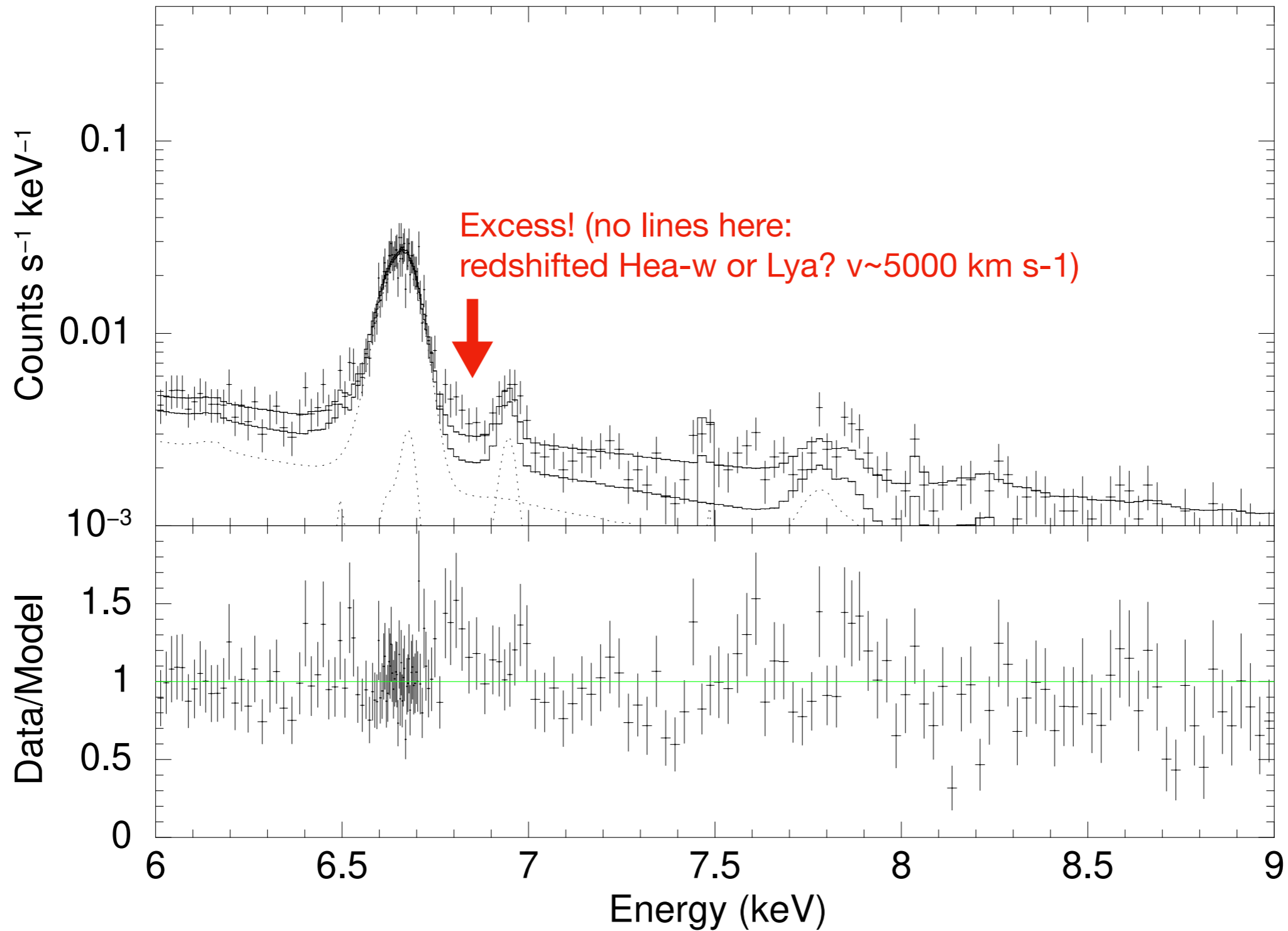
N132D

- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. XRISM Collaboration 2024 model
 - original parameters



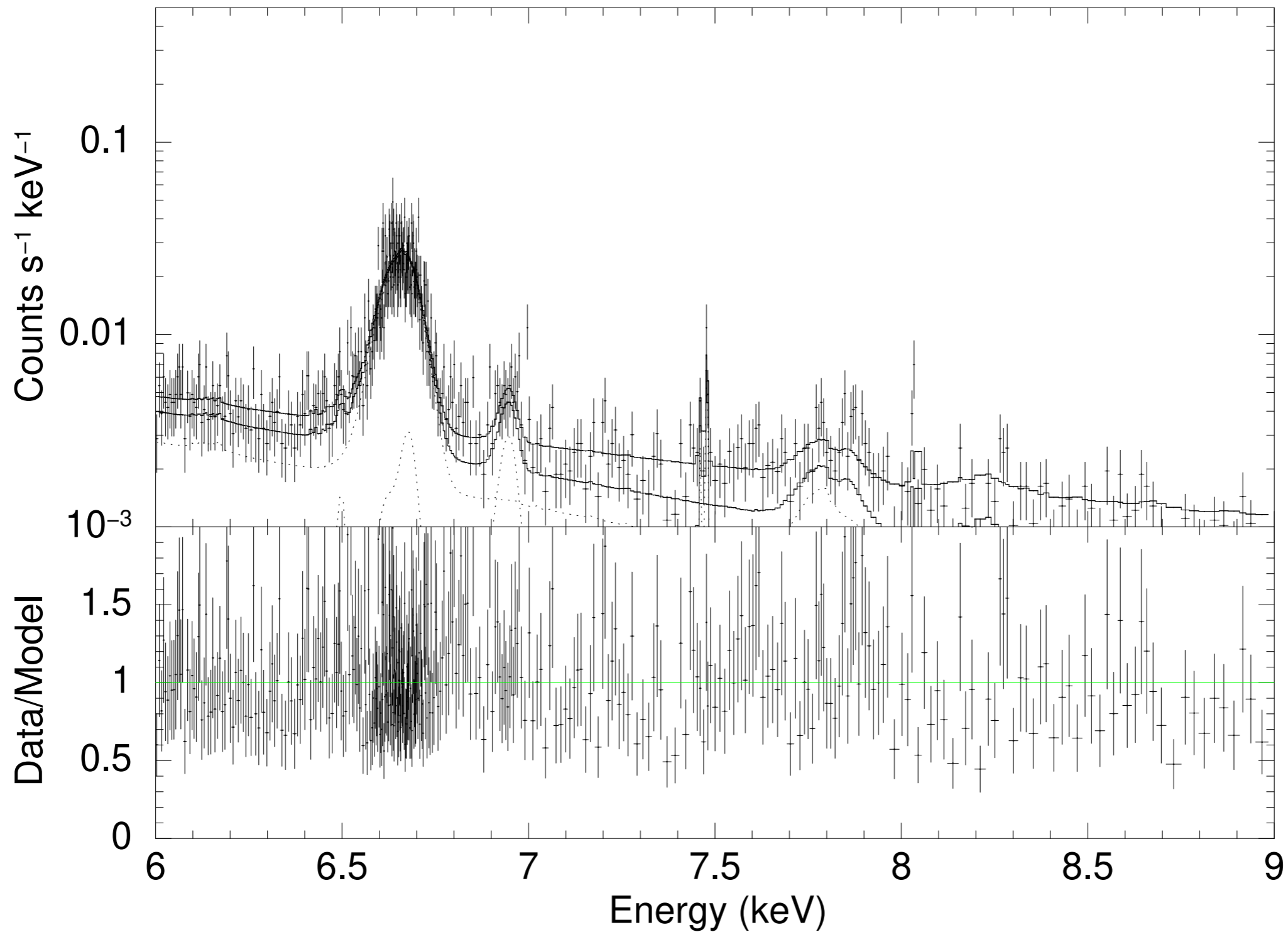
N132D

- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. XRISM Collaboration 2024 model
 - original parameters



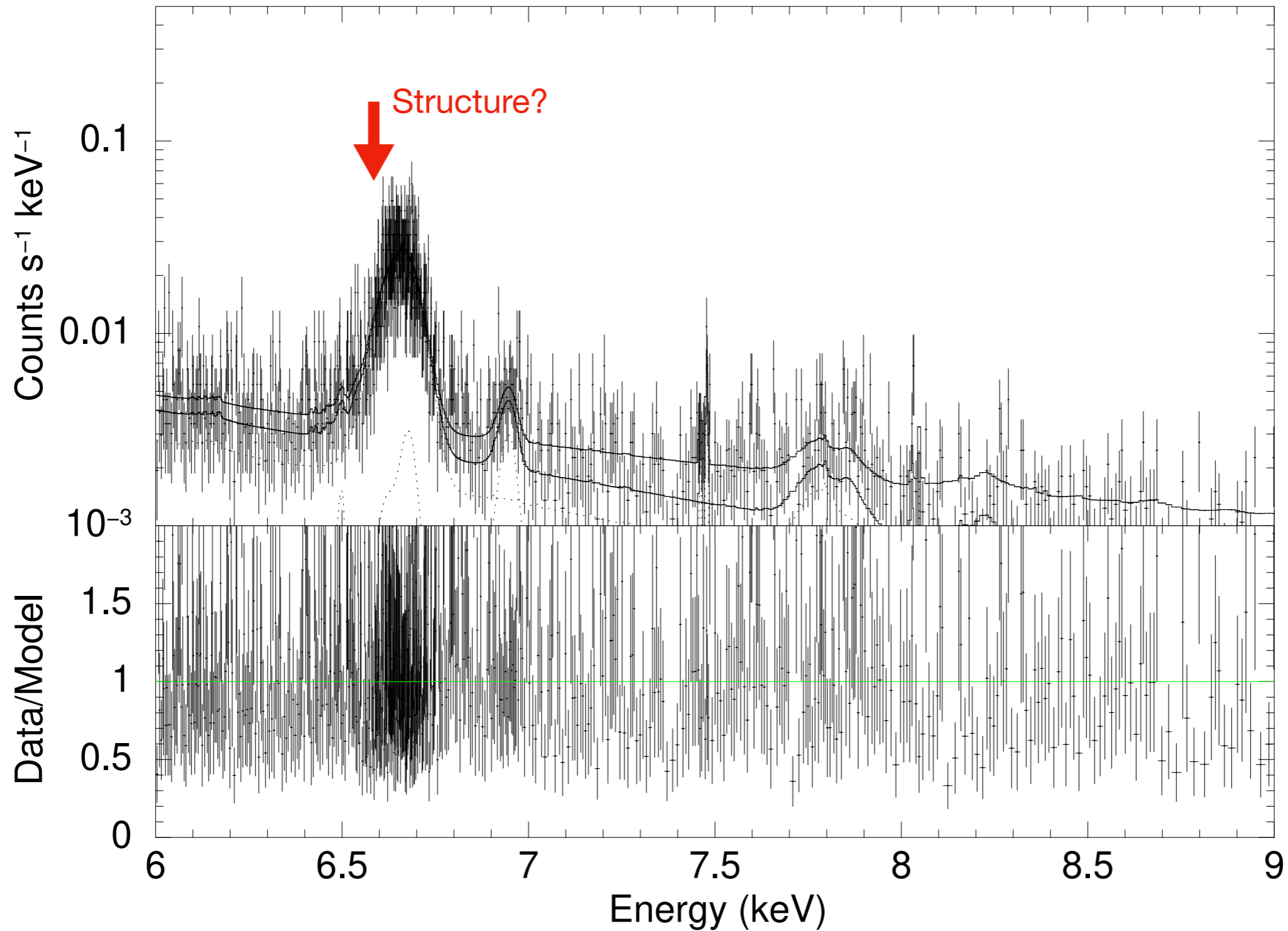
N132D

- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. XRISM Collaboration 2024 model
 - original parameters



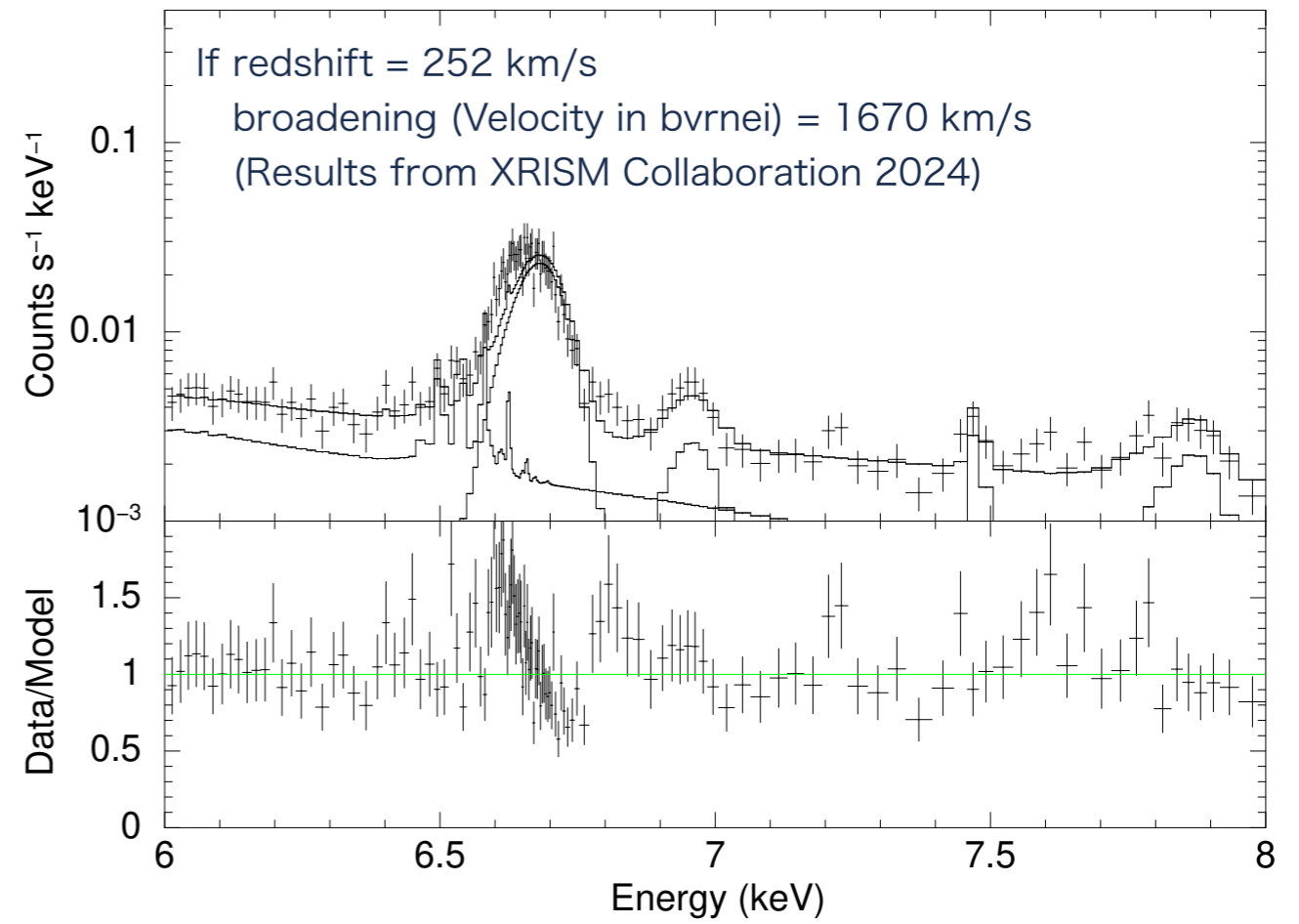
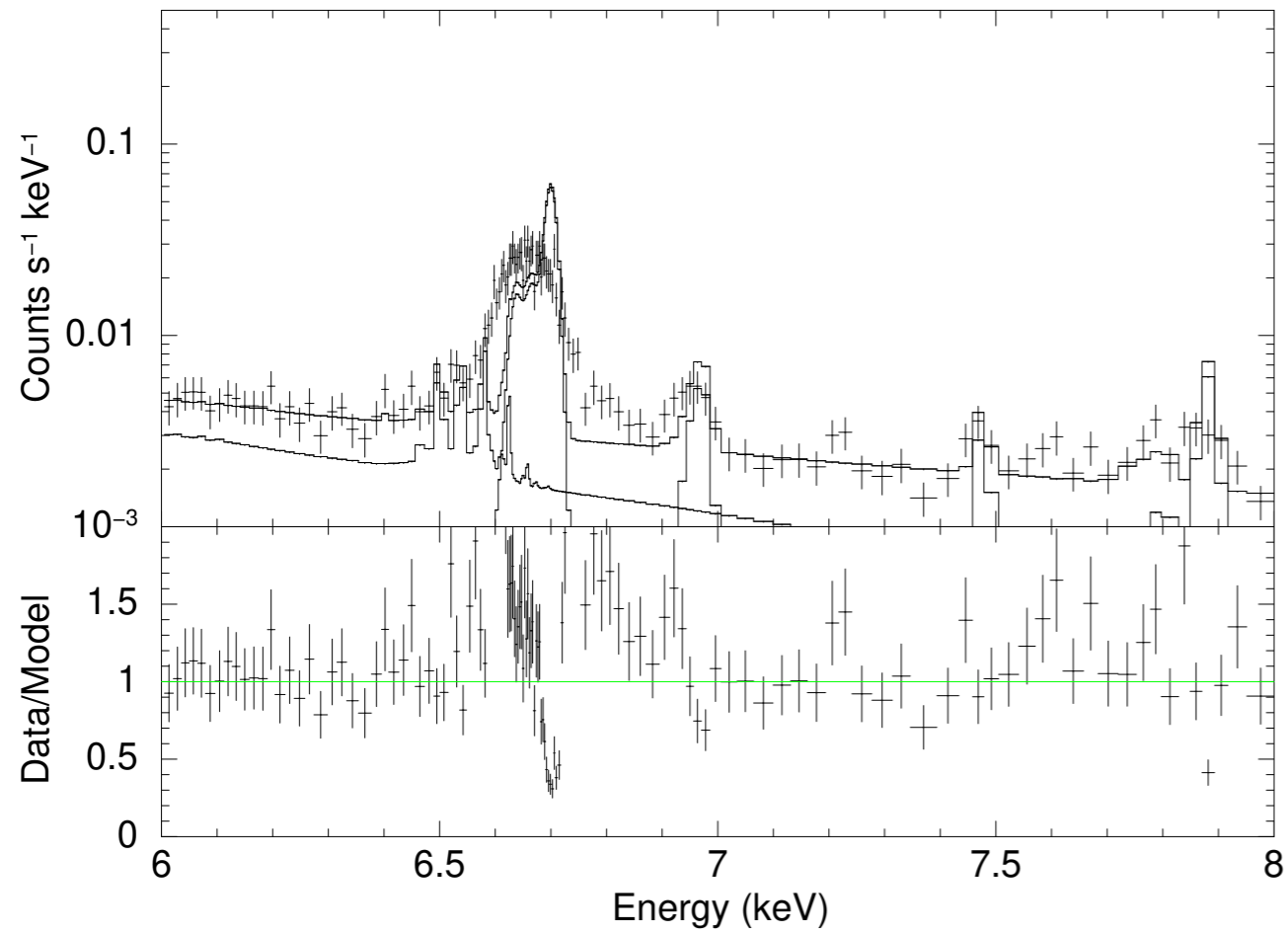
N132D

- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. XRISM Collaboration 2024 model
 - original parameters



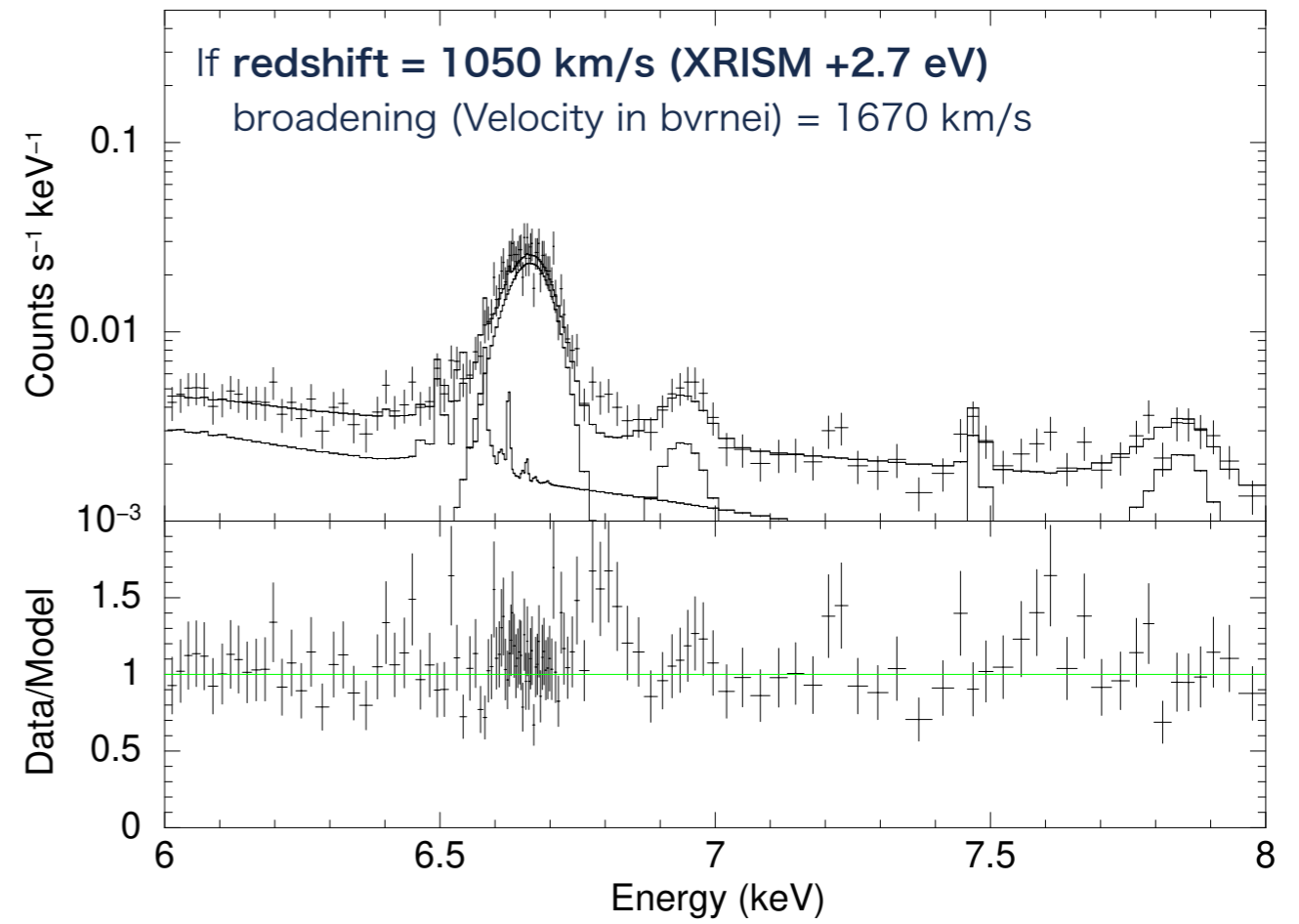
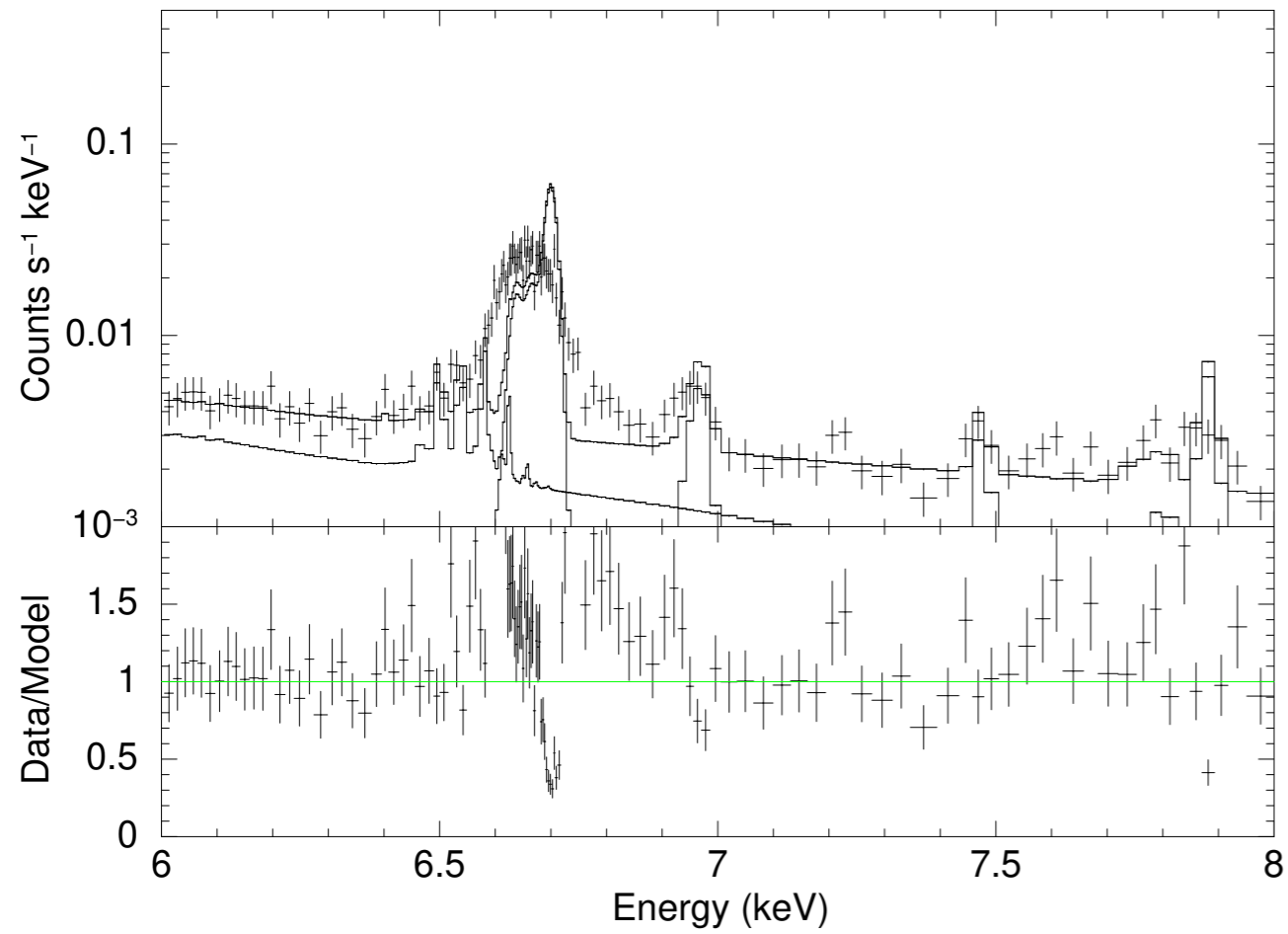
N132D

- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. Foster et al. 2025 model (ionizing_model_n132d_xmm_arf_v1.xcm)
 - norm x1.6



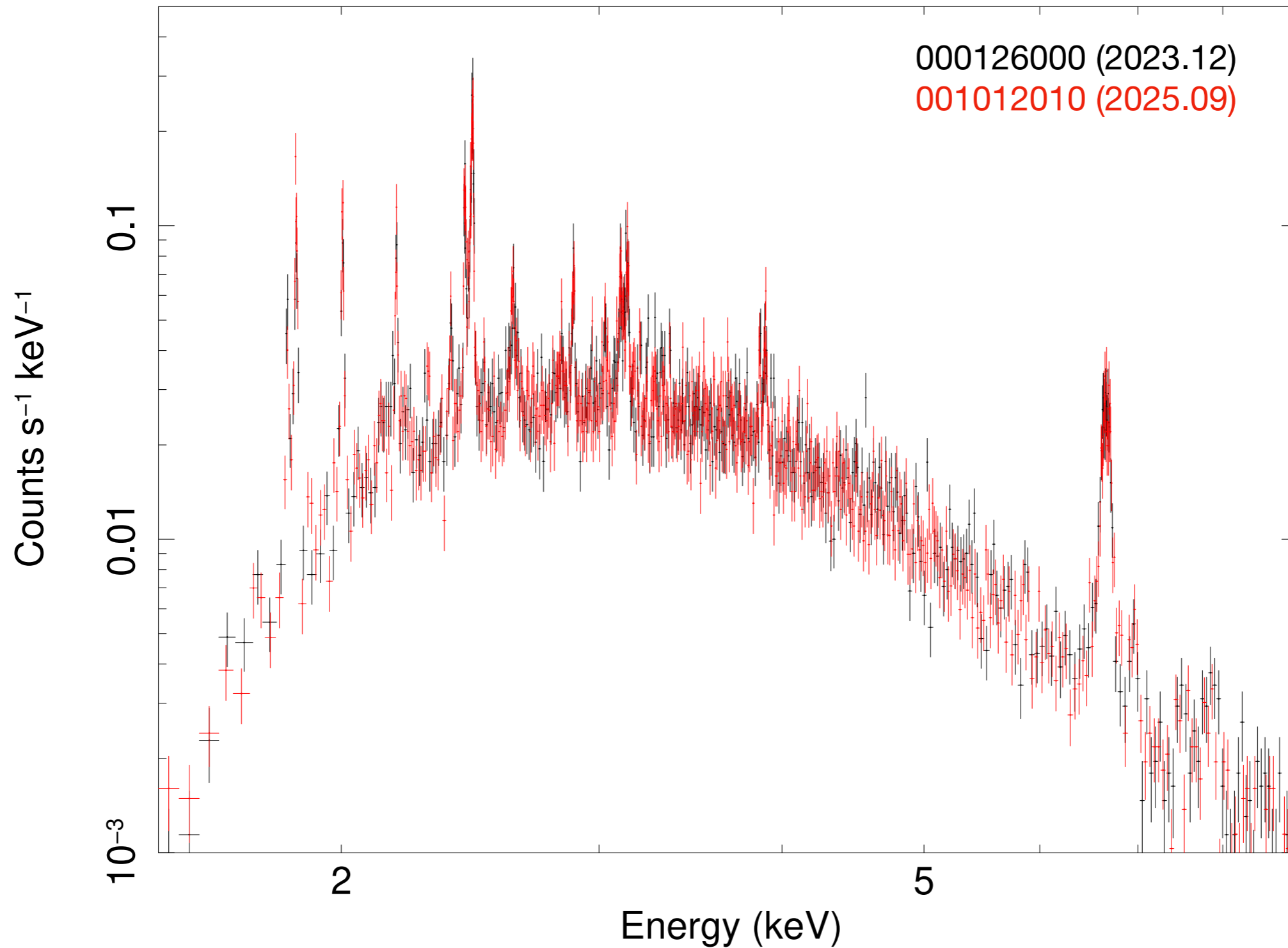
N132D

- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. Foster et al. 2025 model (ionizing_model_n132d_xmm_arf_v1.xcm)
 - norm x1.6



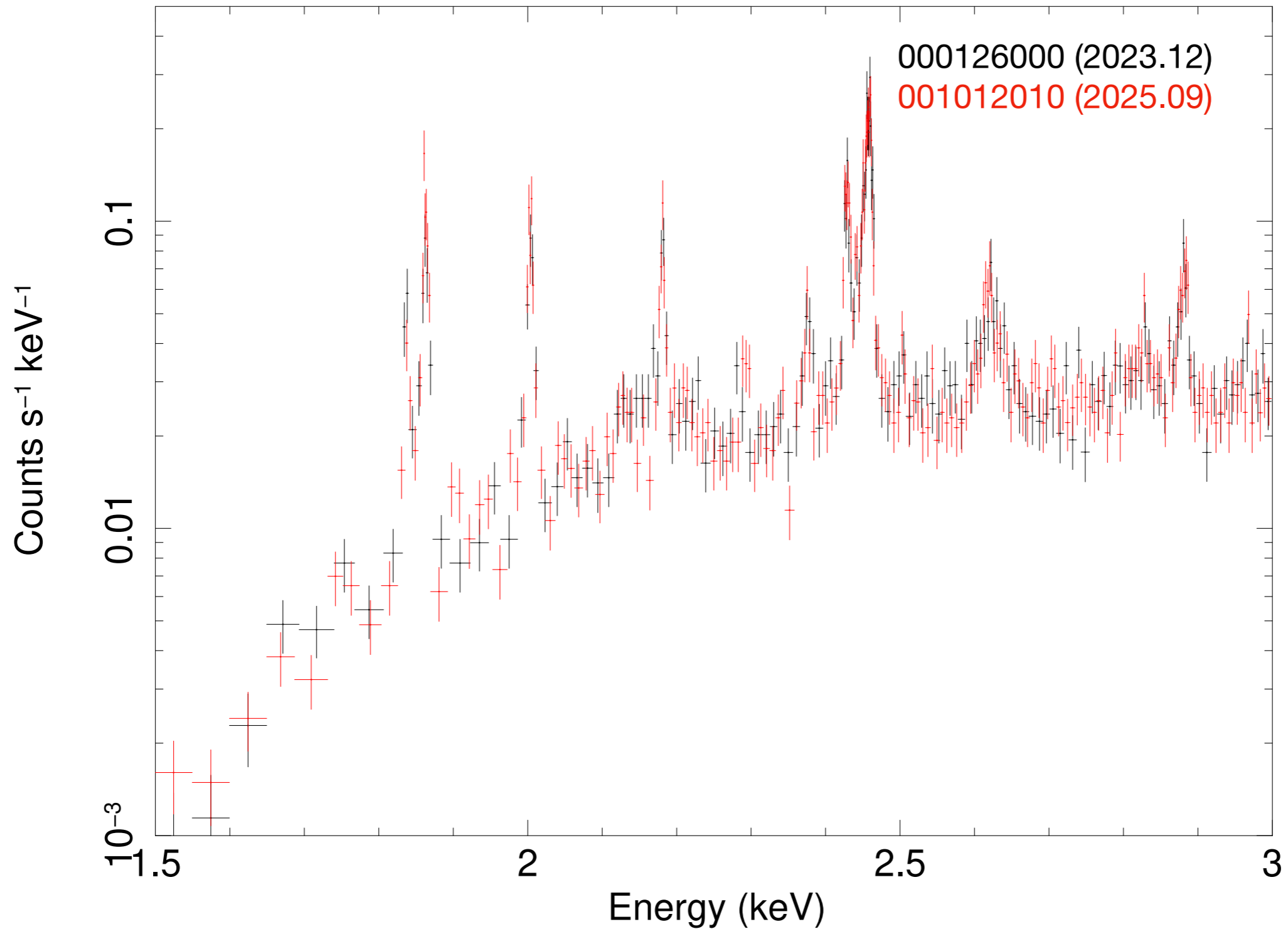
N132D

- XRISM 2 obs. (OBSIDs 000126000, 001012010) are simply compared
- Same RMF & ARF used (made for OBSID 000126000)
- Pretty much consistent with each other



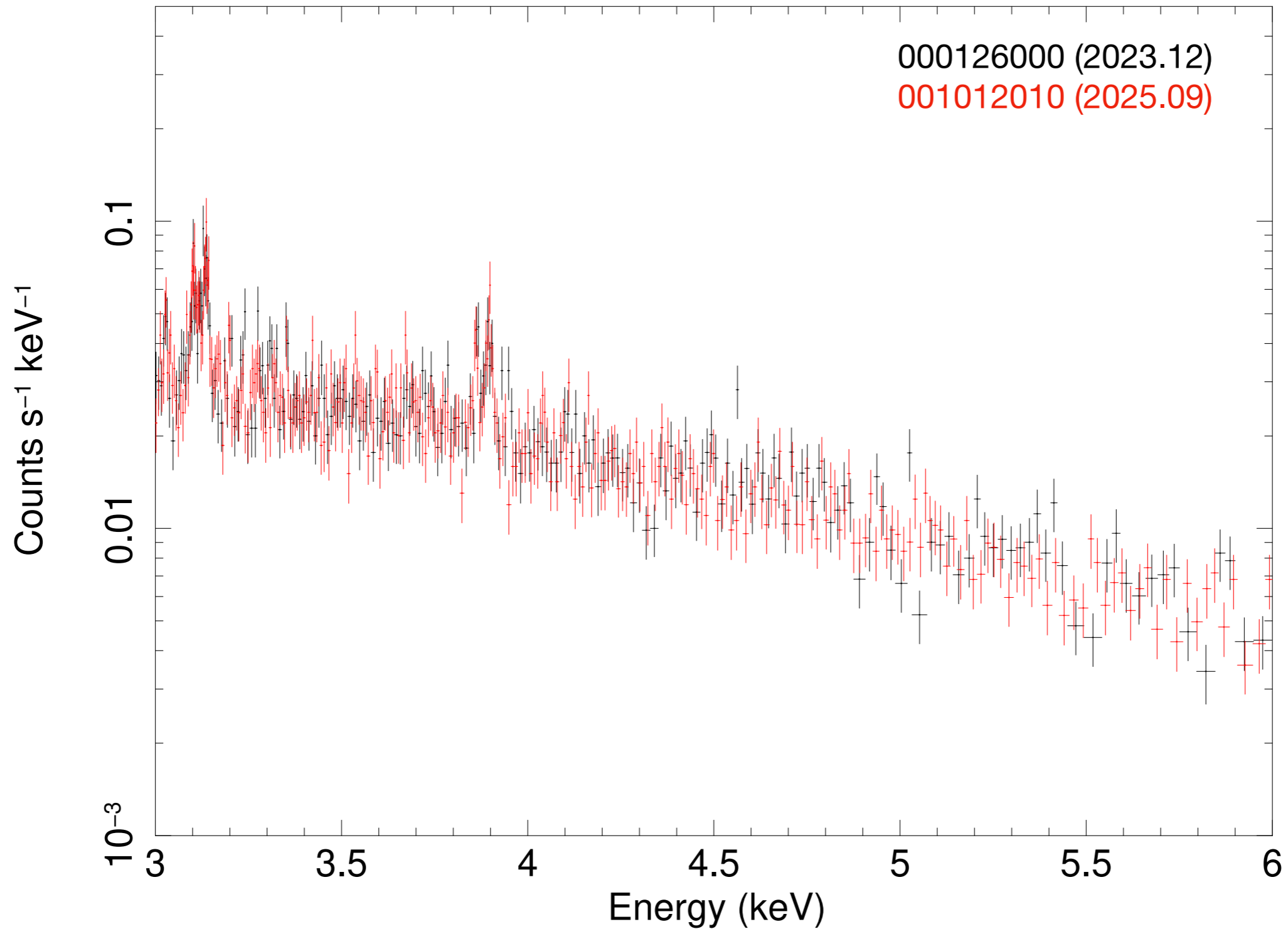
N132D

- XRISM 2 obs. (OBSIDs 000126000, 001012010) are simply compared
- Same RMF & ARF used (made for OBSID 000126000)
- Pretty much consistent with each other



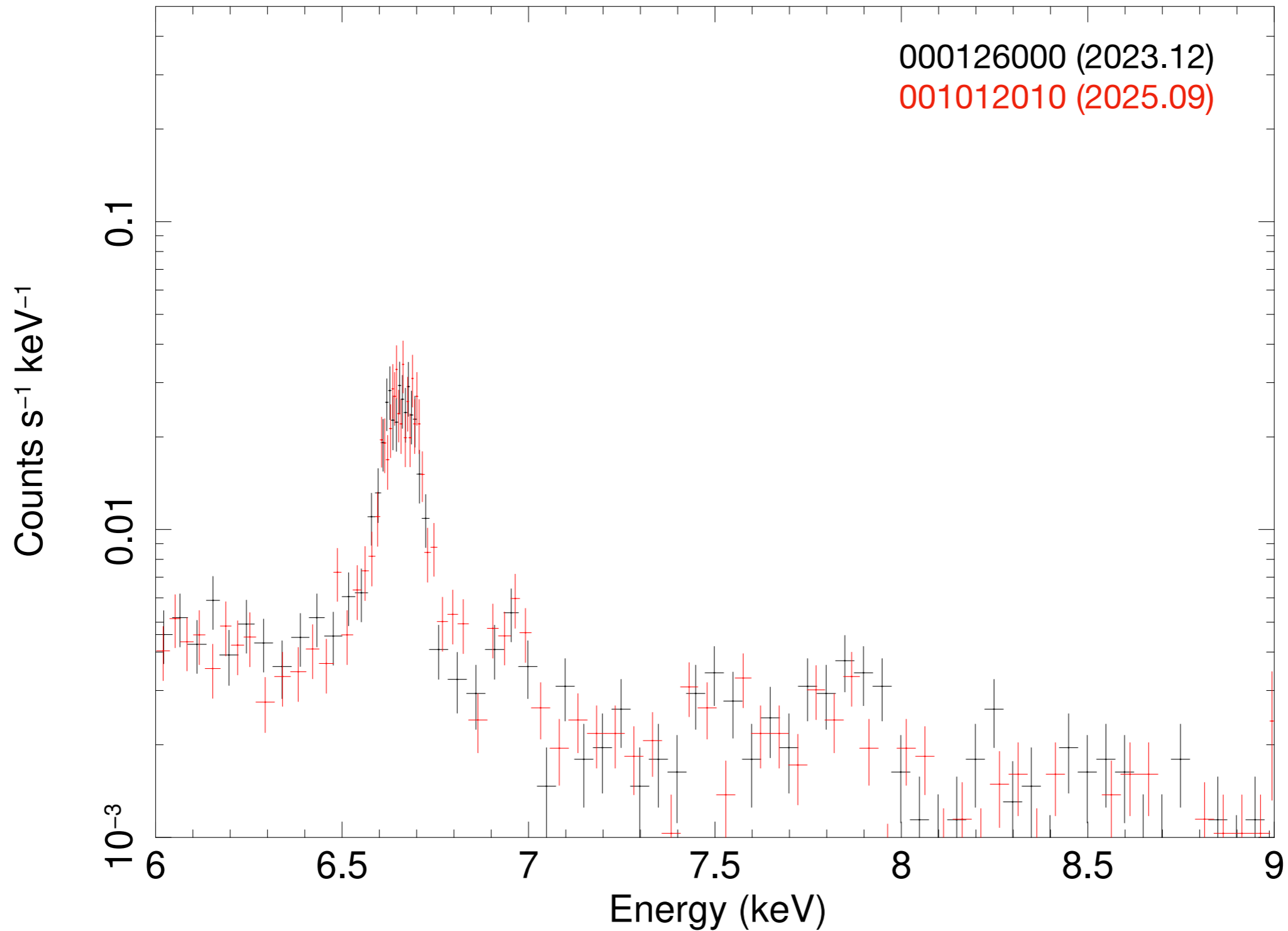
N132D

- XRISM 2 obs. (OBSIDs 000126000, 001012010) are simply compared
- Same RMF & ARF used (made for OBSID 000126000)
- Pretty much consistent with each other



N132D

- XRISM 2 obs. (OBSIDs 000126000, 001012010) are simply compared
- Same RMF & ARF used (made for OBSID 000126000)
- Pretty much consistent with each other



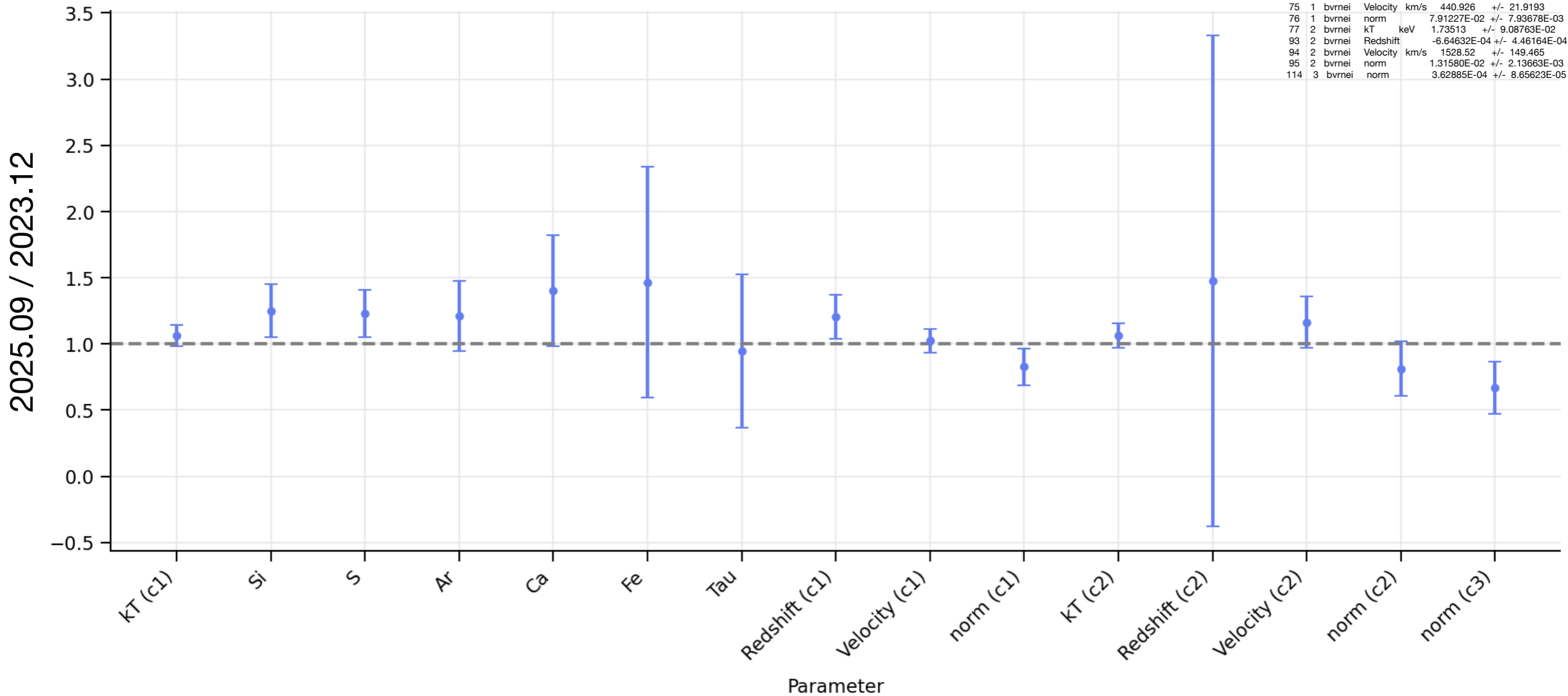
N132D

- XRISM 2 obs. (OBSIDs 000126000, 001012010) are simply compared
- Fitting parameters with XRISM Collabo. 2024 model
- Consistent with each other within ~1 sigma

```

Model src:bvrnei<1> + bvrnei<2> + bvrnei<3> Source No.: 1 Active/On
Model Model Component Parameter Unit Value
par comp
Data group: 1
 1 1 bvrnei kT keV 0.816720 +/- 5.36441E-02
10 1 bvrnei Si 0.977993 +/- 8.42270E-02
11 1 bvrnei S 0.697279 +/- 4.65580E-02
12 1 bvrnei Ar 0.676458 +/- 8.44229E-02
13 1 bvrnei Ca 0.742971 +/- 0.128944
14 1 bvrnei Fe 1.22971 +/- 9.59033E-02
16 1 bvrnei Tau s/cm^3 6.70683E+11 +/- 3.54965E+11
17 1 bvrnei Redshift 7.87190E-04 +/- 9.20132E-05
18 1 bvrnei Velocity km/s 430.173 +/- 31.1913
19 1 bvrnei norm 9.55662E-02 +/- 1.27145E-02
20 2 bvrnei kT keV 1.63311 +/- 0.113879
36 2 bvrnei Redshift 4.49943E-04 +/- 4.76888E-04
37 2 bvrnei Velocity km/s 1314.44 +/- 177.641
38 2 bvrnei norm 1.62191E-02 +/- 3.16088E-03
57 3 bvrnei norm 5.43186E-04 +/- 9.61196E-05
Data group: 2
58 1 bvrnei kT keV 0.869239 +/- 3.22109E-02
67 1 bvrnei Si 1.22233 +/- 0.162935
68 1 bvrnei S 0.857053 +/- 0.111160
69 1 bvrnei Ar 0.818334 +/- 0.146019
70 1 bvrnei Ca 1.04273 +/- 0.252853
71 1 bvrnei Fe 1.80203 +/- 1.06226
73 1 bvrnei Tau s/cm^3 6.35492E+11 +/- 1.93159E+11
74 1 bvrnei Redshift 9.49615E-04 +/- 6.92970E-05
75 1 bvrnei Velocity km/s 440.926 +/- 21.9193
76 1 bvrnei norm 7.91227E-02 +/- 7.93678E-03
77 2 bvrnei kT keV 1.73513 +/- 9.08763E-02
93 2 bvrnei Redshift -6.64632E-04 +/- 4.46164E-04
94 2 bvrnei Velocity km/s 1528.52 +/- 149.465
95 2 bvrnei norm 1.31580E-02 +/- 2.13663E-03
114 3 bvrnei norm 3.62885E-04 +/- 8.65623E-05
    
```

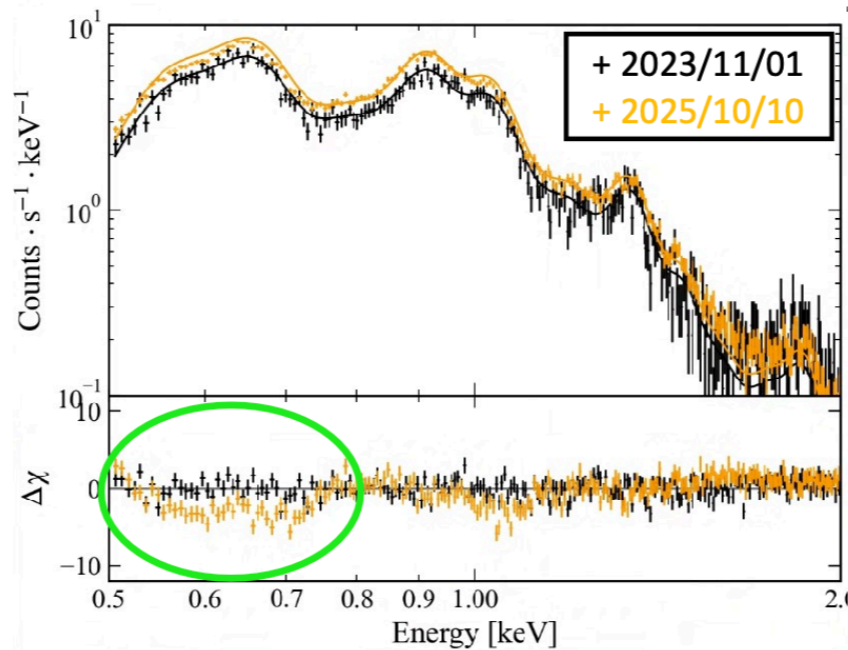
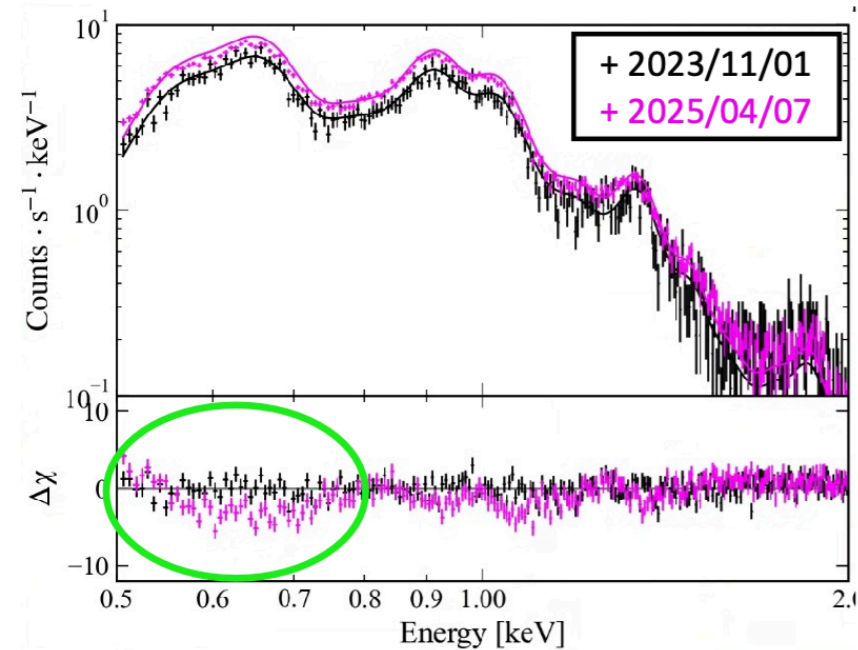
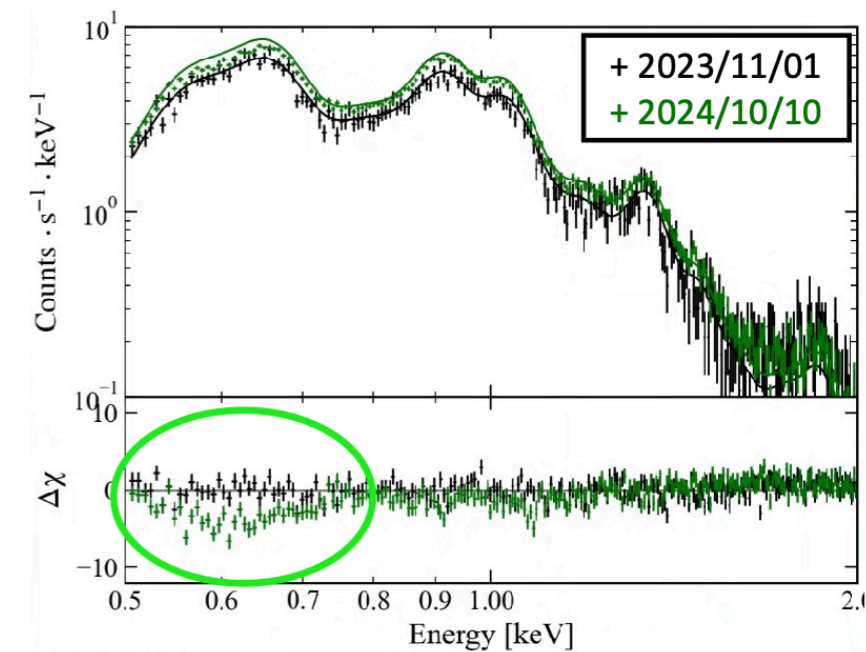
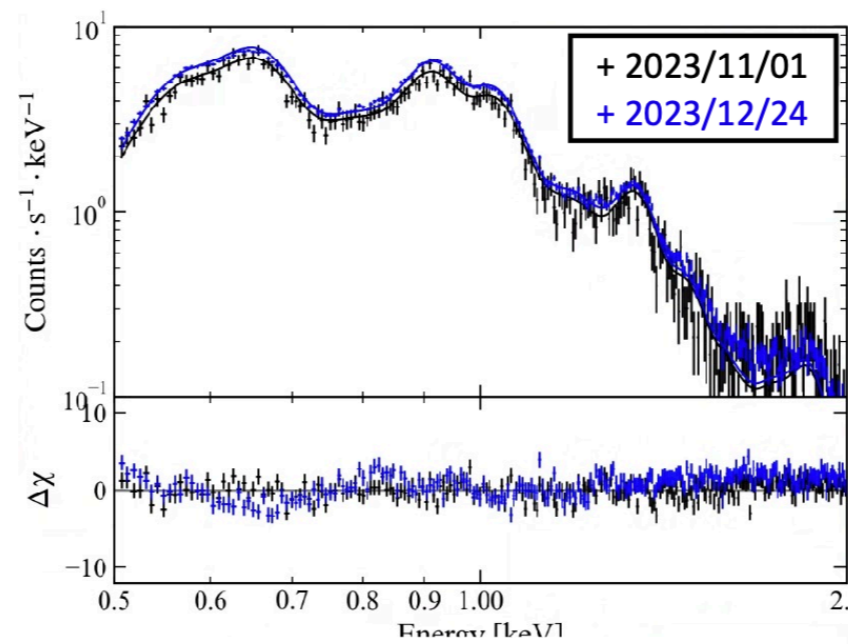
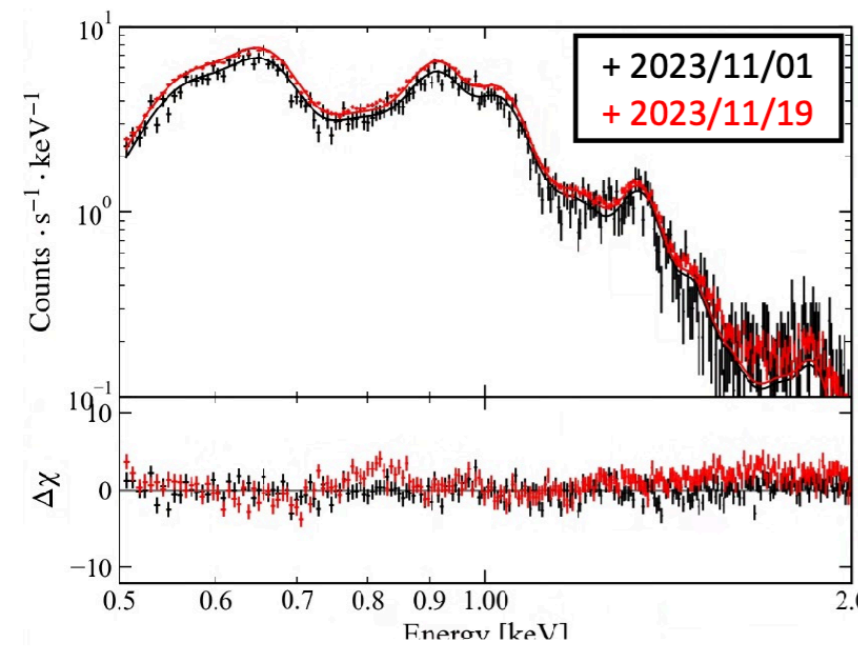
1st vs. 2nd observations



1E0102

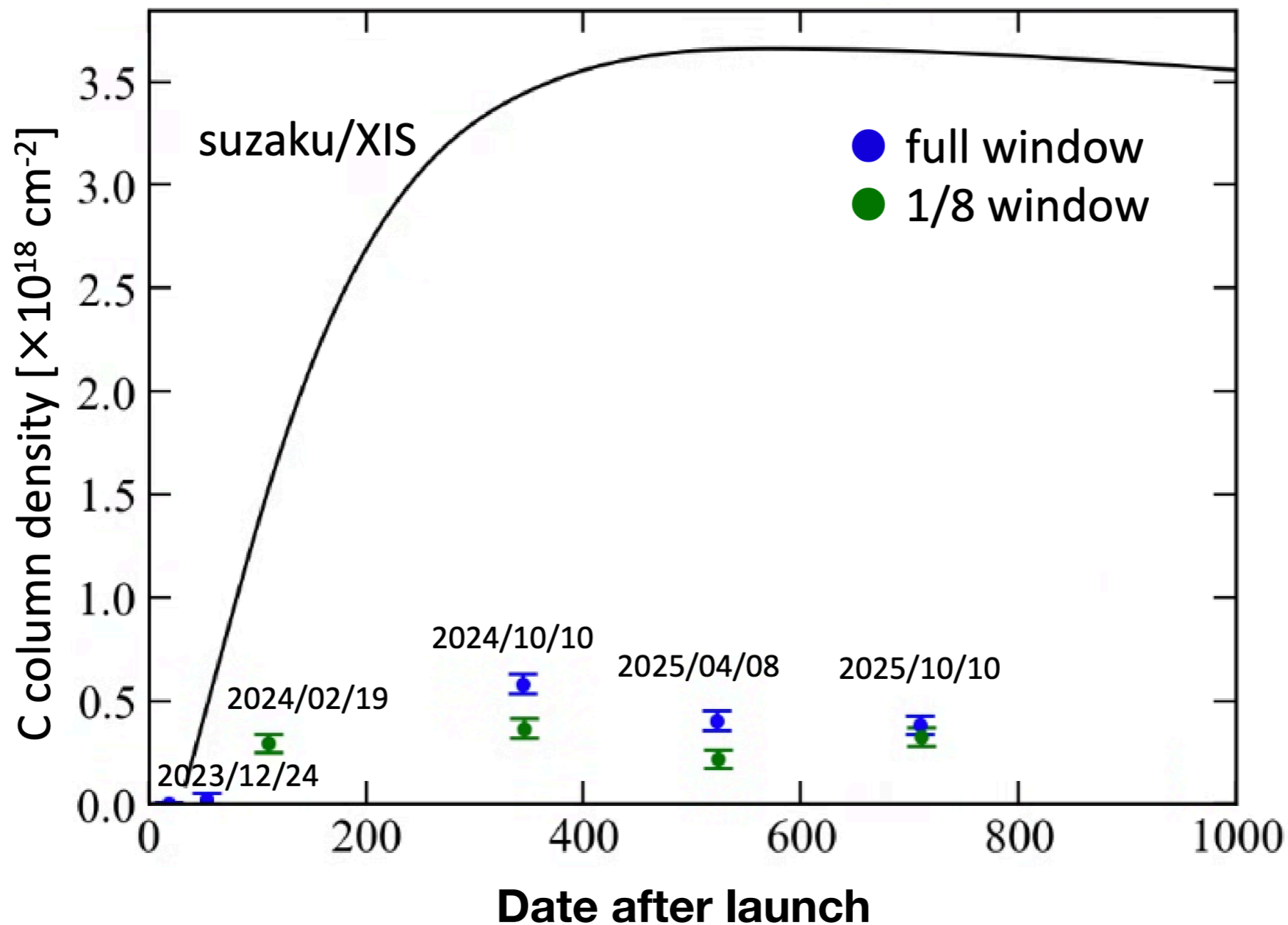
1E0102 Xtend status

- XRISM 4 obs. (OBSIDs 101007010/11=full win, 101008010/11=1/8 win) vs. IACHEC model
 - original parameters
- <0.5 keV show some residuals
- Mg line at 1.3 keV matches well ($<10\%$)
- We have improved how we fit data



1E0102 Xtend status

- XRISM 4 obs. (OBSIDs 101007010/11=full win, 101008010/11=1/8 win) vs. IACHEC model
 - original parameters
- <0.5 keV show some residuals
- Mg line at 1.3 keV matches well (<10%)
- We have improved how we fit data → **now there may be some contamination, but not evolving**

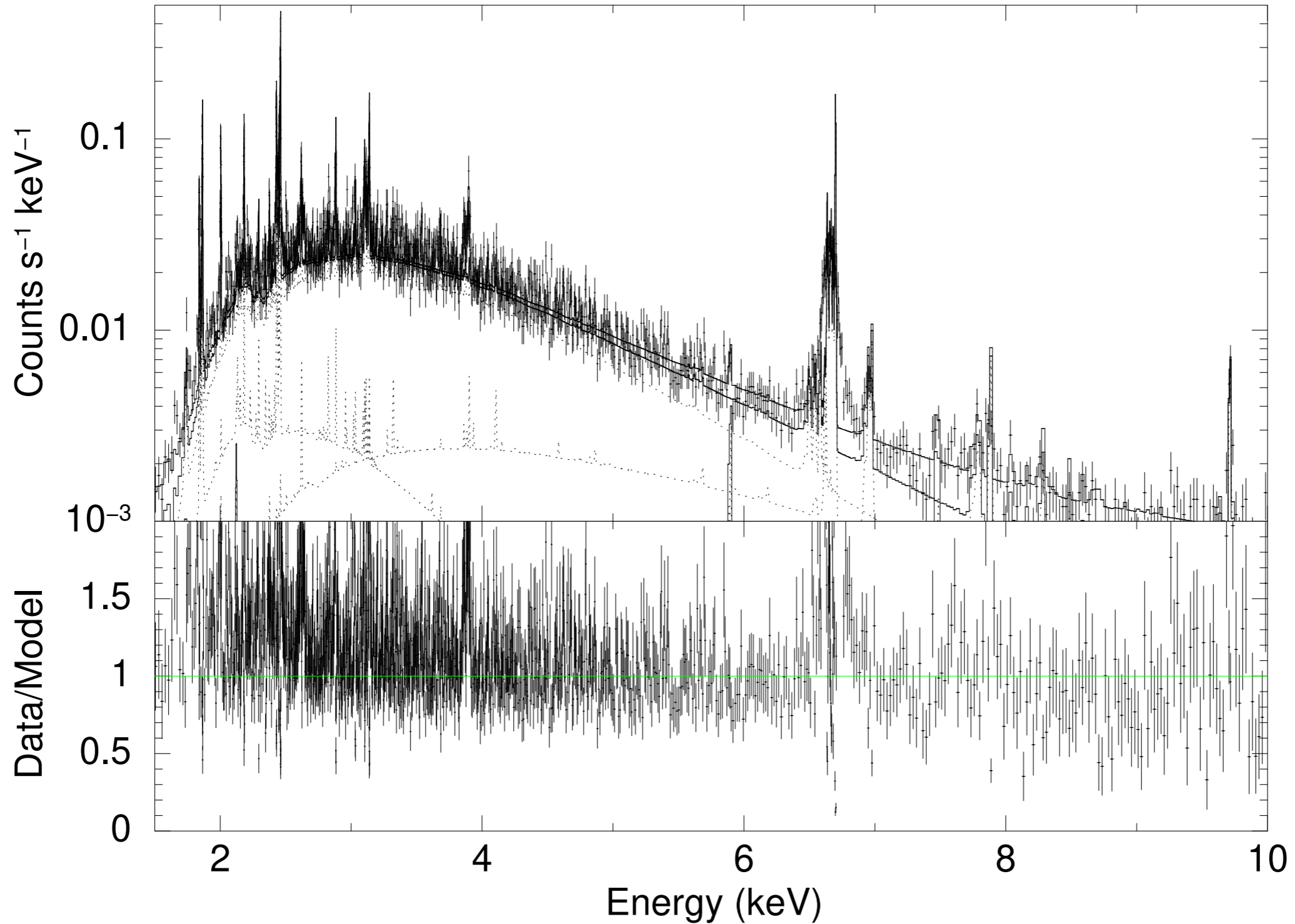


c.f.

N132D

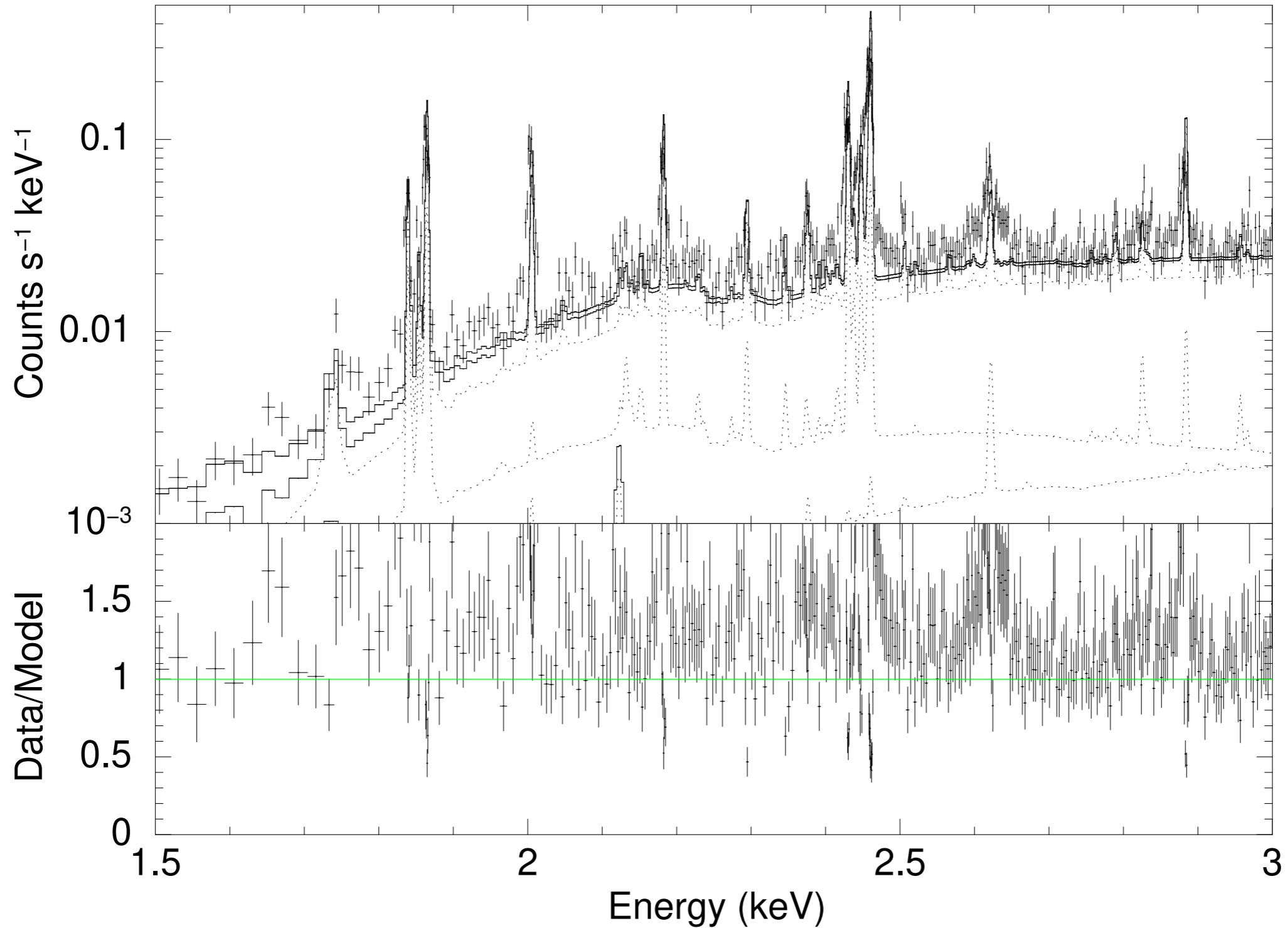
NEW (2025.09.25–28) !

- XRISM 3 obs. (OBSIDs 000126000, 000128000, **001012010**) merged vs. n132d_afoster_suzuki_vrnei_20210420_broad_tied.mdl
 - original parameters



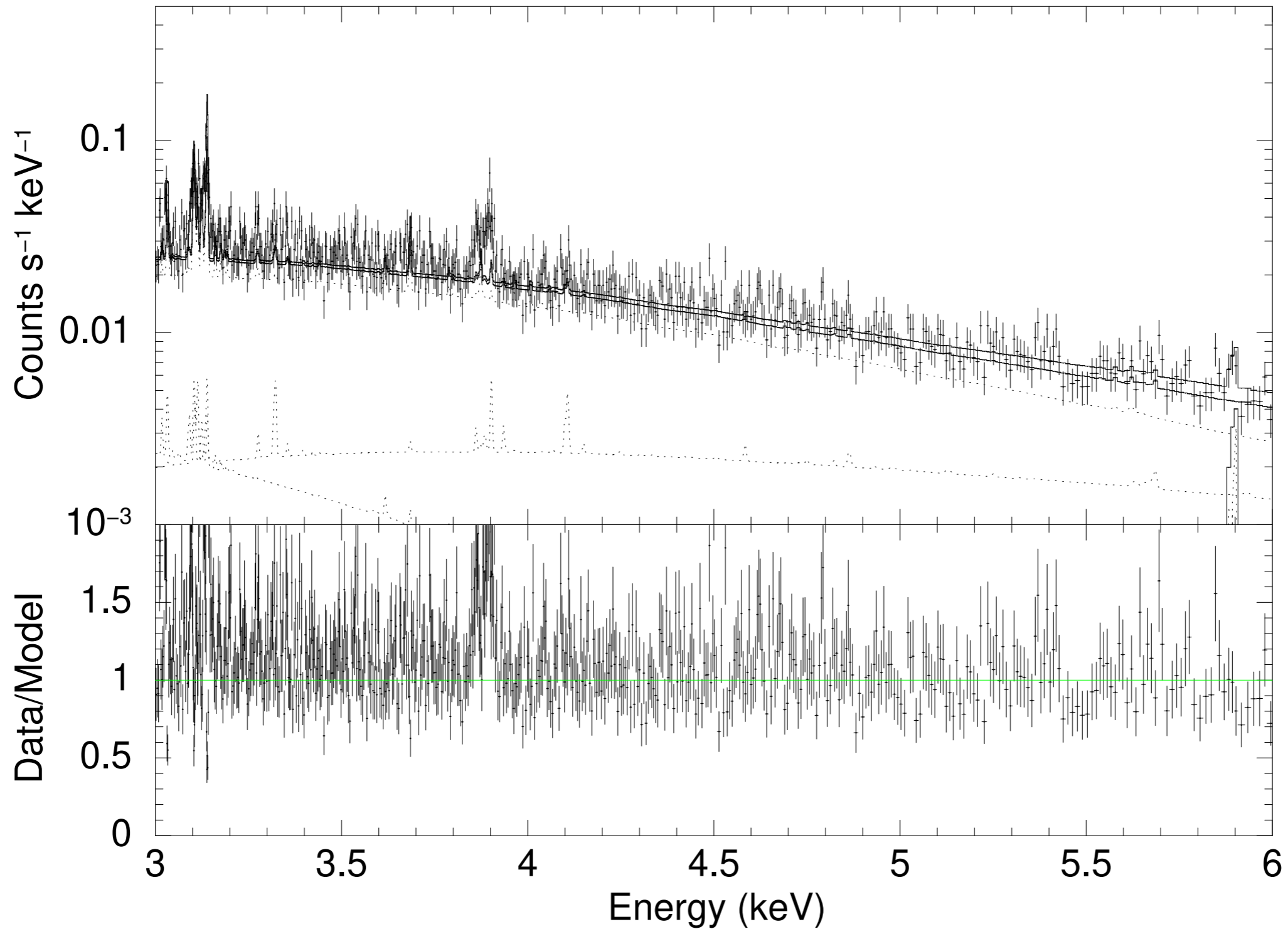
N132D

- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. n132d_afoster_suzuki_vrnei_20210420_broad_tied.mdl
 - original parameters



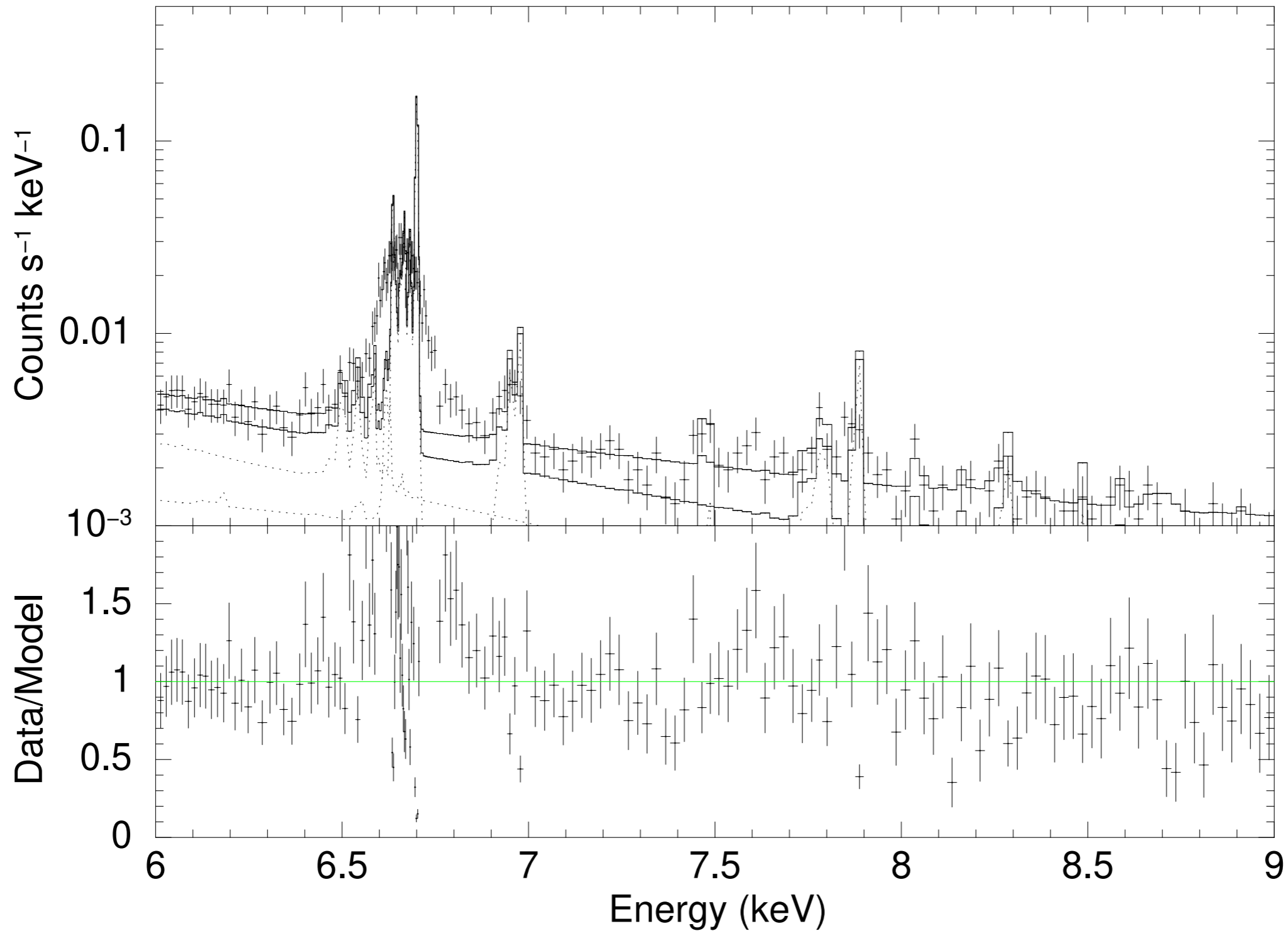
N132D

- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. n132d_afoster_suzuki_vrnei_20210420_broad_tied.mdl
 - original parameters



N132D

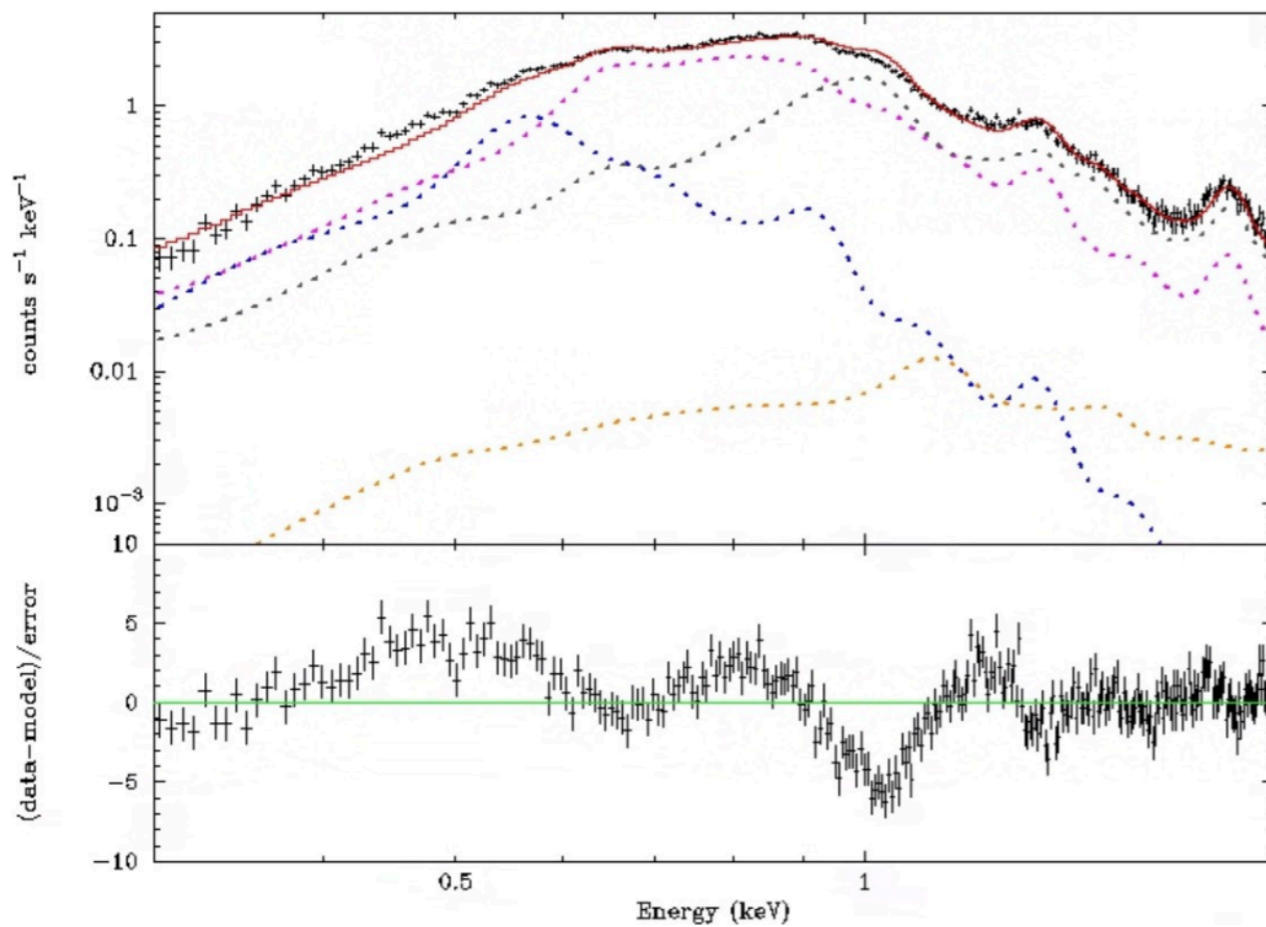
- XRISM 3 obs. (OBSIDs 000126000, 000128000, 001012010) merged vs. n132d_afoster_suzuki_vrnei_20210420_broad_tied.mdl
 - original parameters



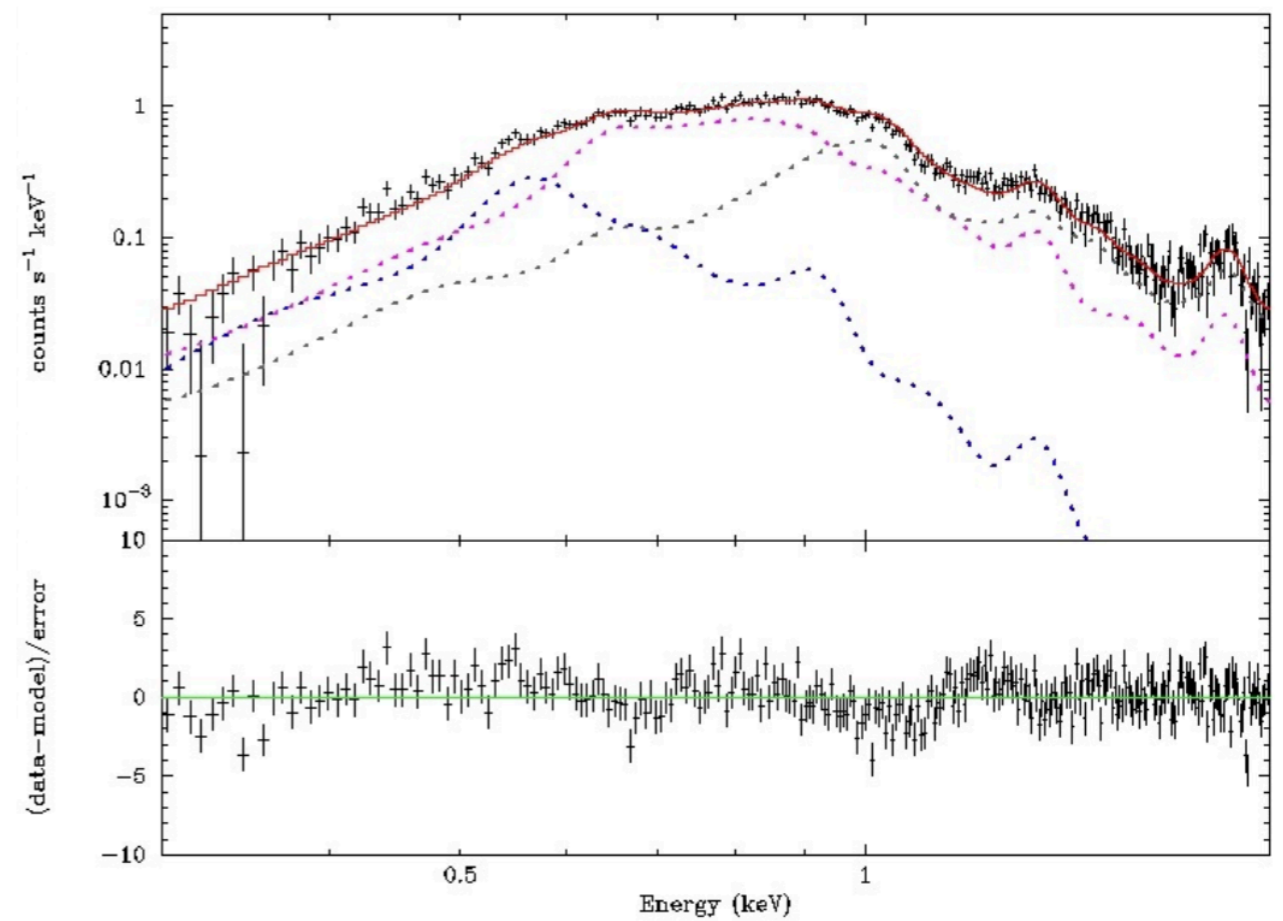
N132D Xtend status

- XRISM 2 obs. (OBSIDs 000126000=full win, 000128000=1/8 win) vs. n132d_afoster_suzuki_vrnei_20210420_broad_tied.mdl
 - original parameters
- central 2 arcmin is excluded to avoid pileup, but full-win data still affected?

Full window (000126000)



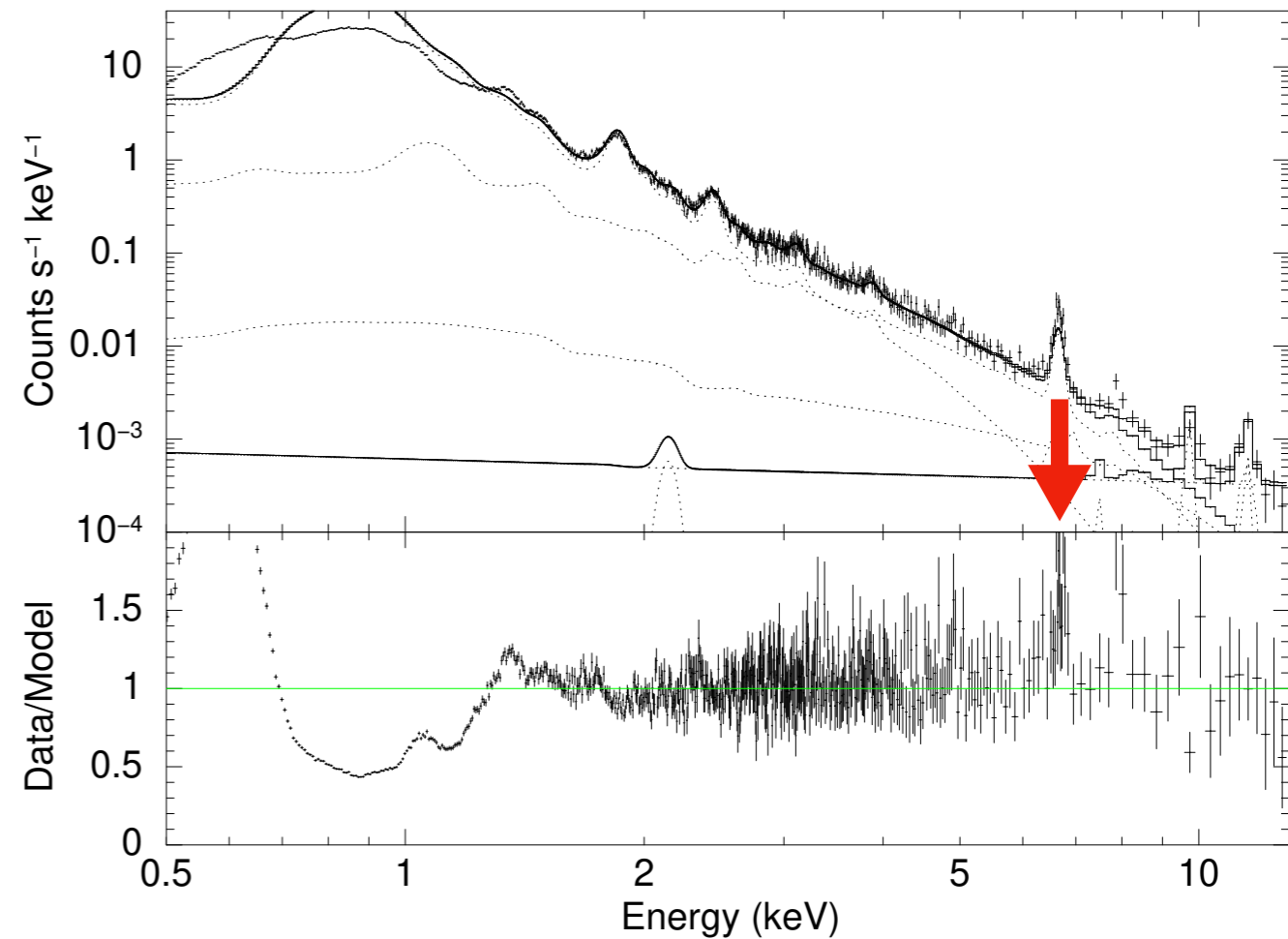
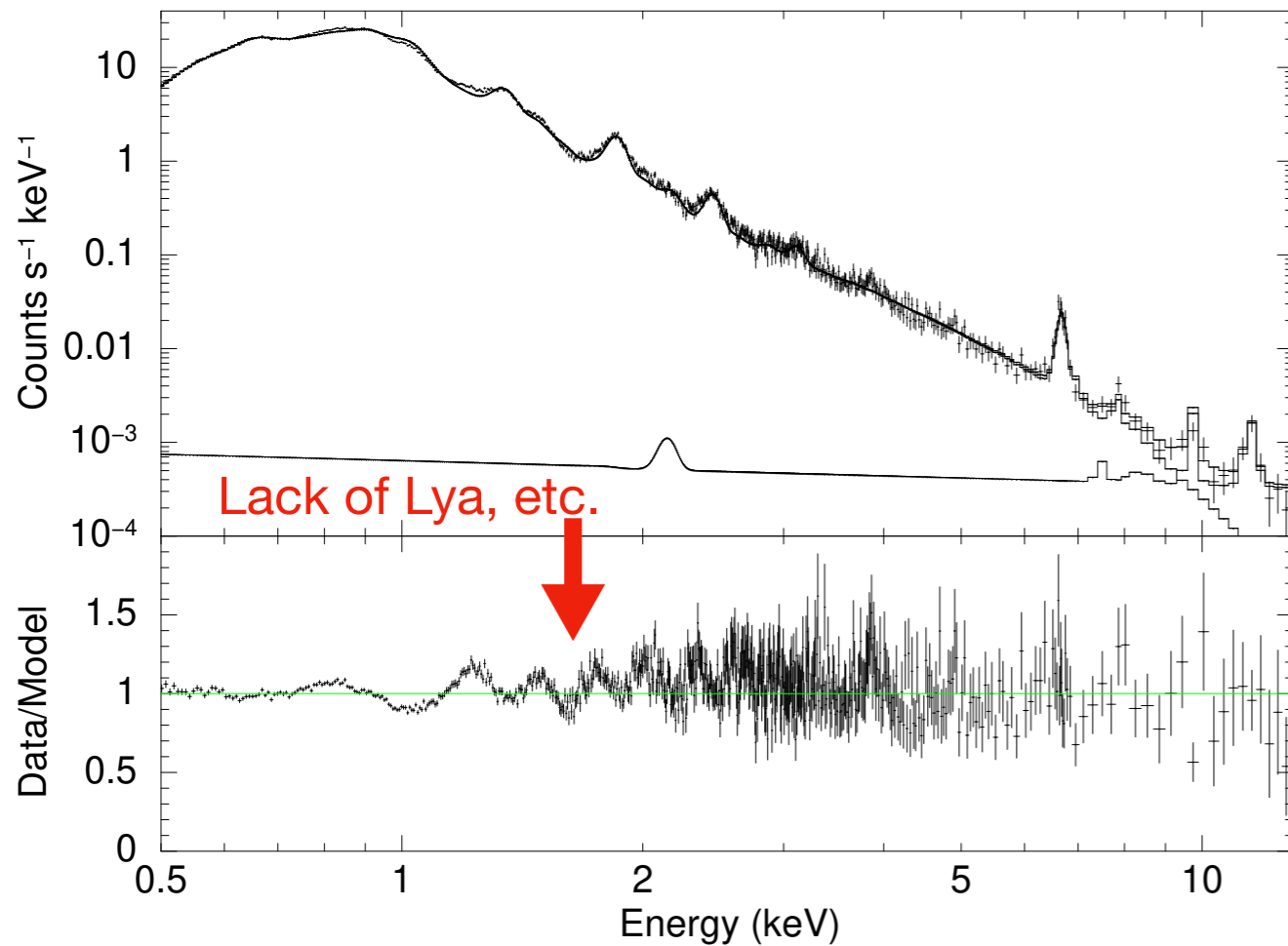
1/8 window (000126000)



N132D Xtend status

- XRISM 2 obs. (OBSIDs 000126000=full win, 000128000=1/8 win) vs. n132d_afoster_suzuki_vrnei_20210420_broad_tied.mdl & XRISM Collaboration 2024 model
 - original parameters

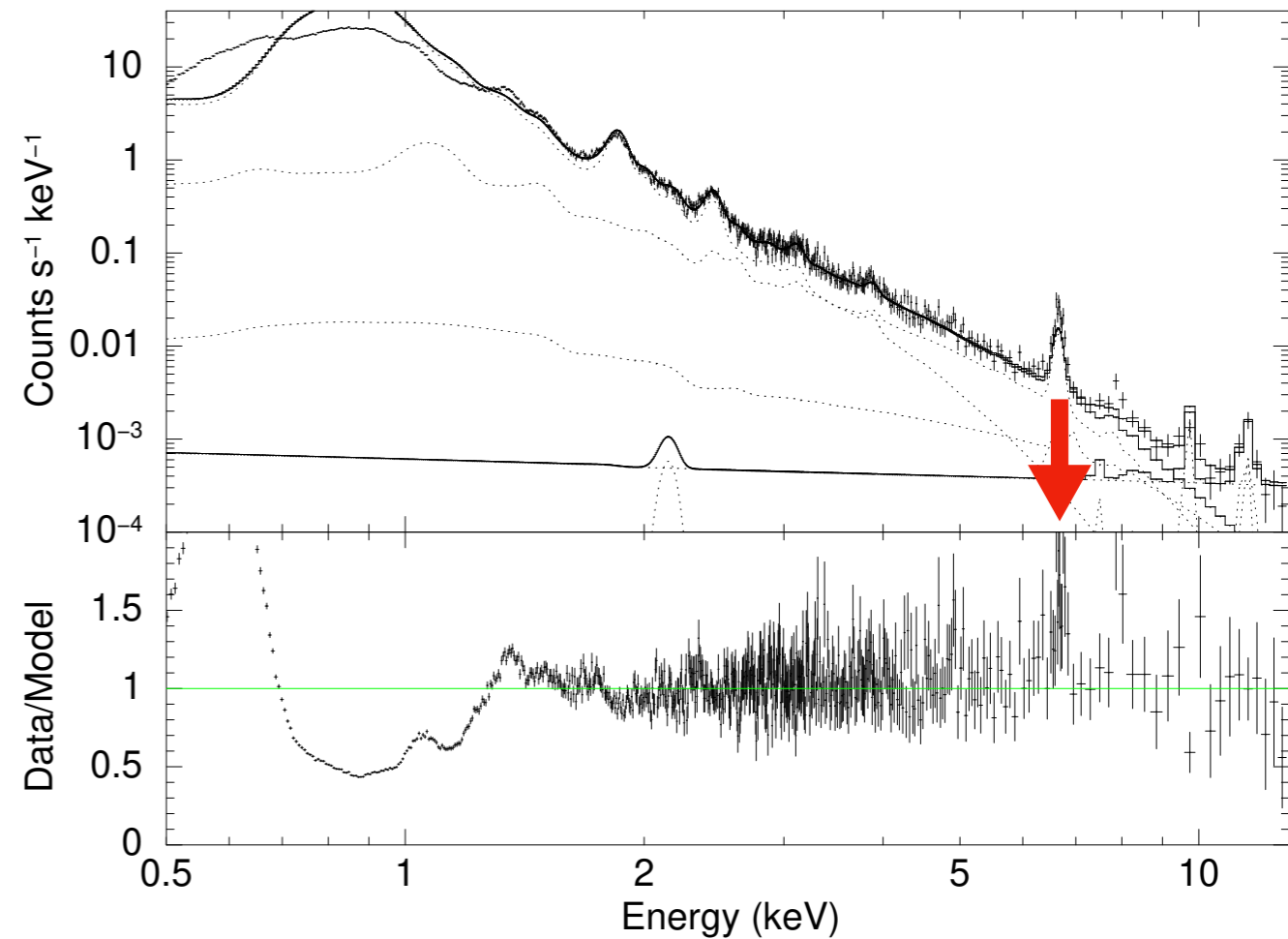
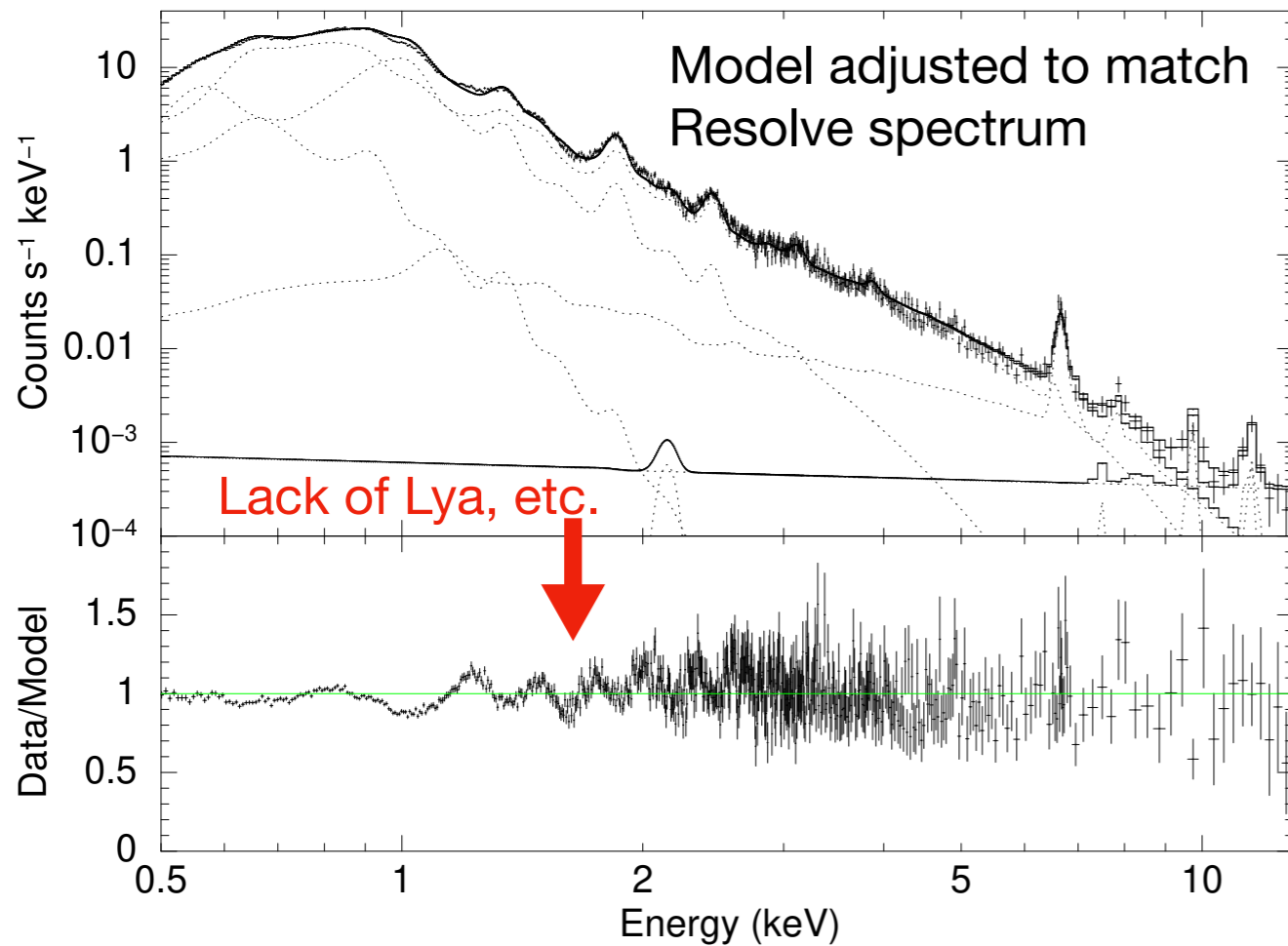
1/8 window (000126000)



N132D Xtend status

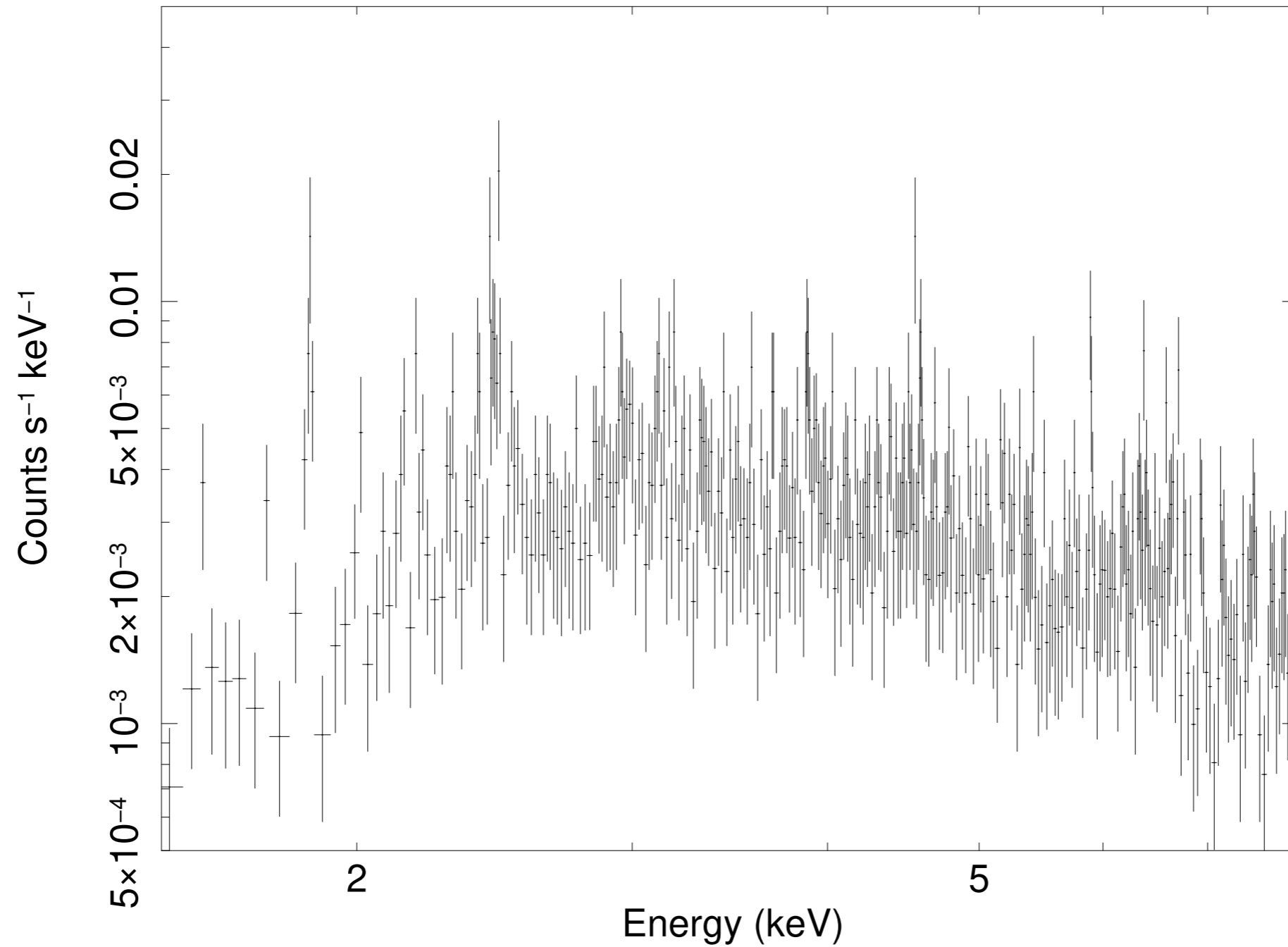
- XRISM 2 obs. (OBSIDs 000126000=full win, 000128000=1/8 win) vs. n132d_afoster_suzuki_vrnei_20210420_broad_tied.mdl & XRISM Collaboration 2024 model
 - "n132d_afoster~" model adjusted to match Resolve data

1/8 window (000126000)



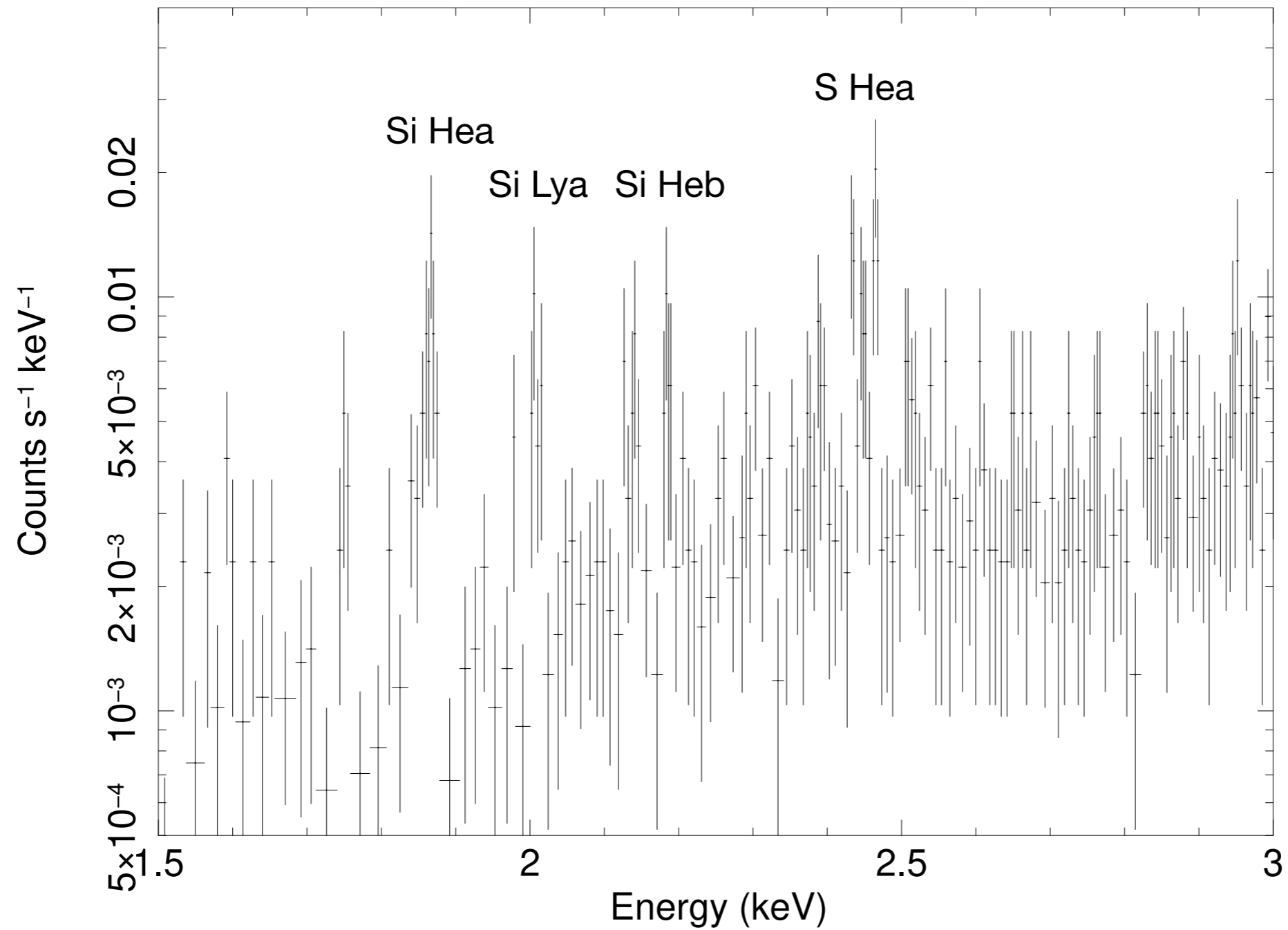
1E0102

- XRISM 2 obs. (OBSIDs 000118000, 000136000) merged



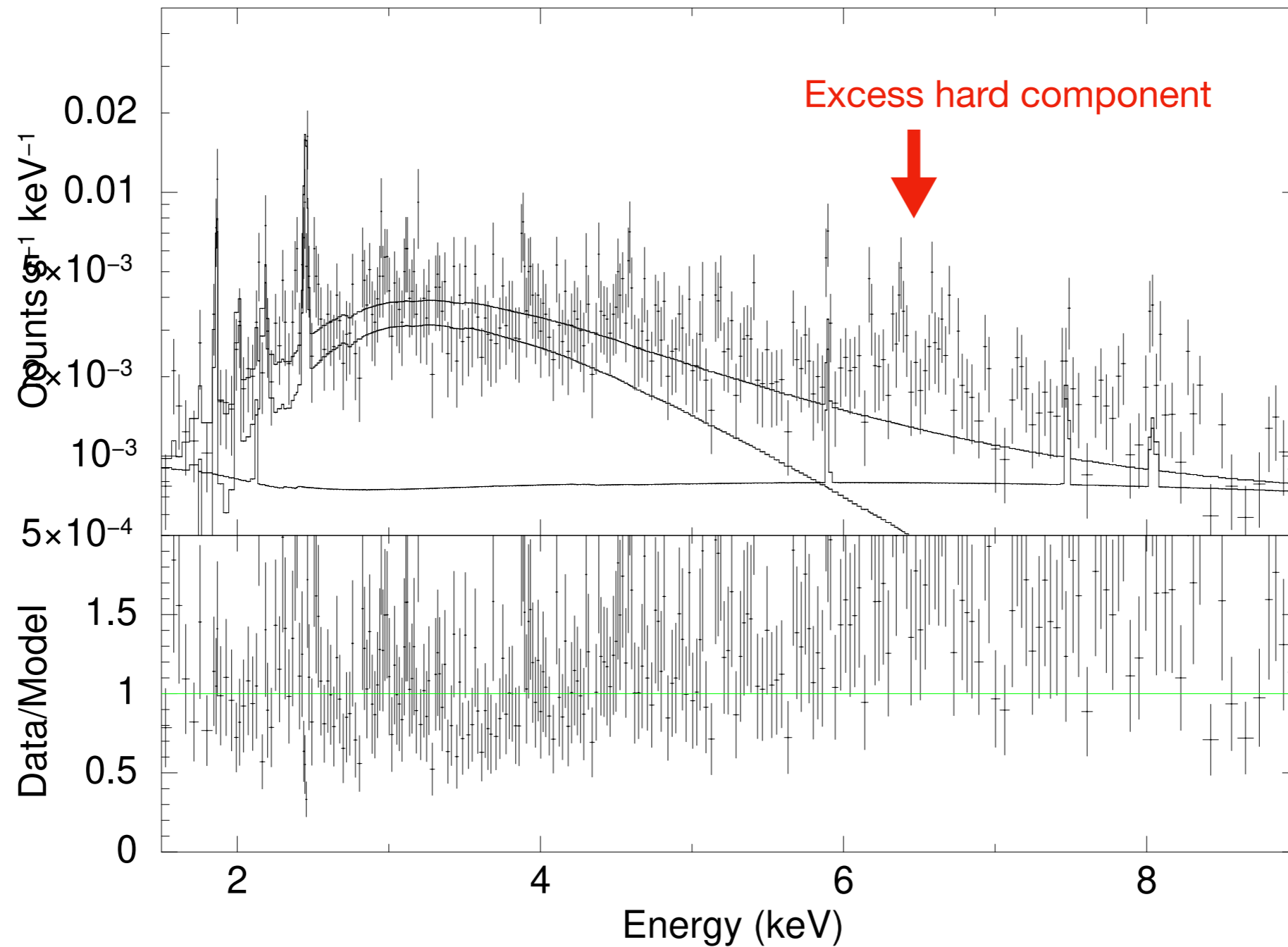
1E0102

- XRISM 2 obs. (OBSIDs 000118000, 000136000) merged



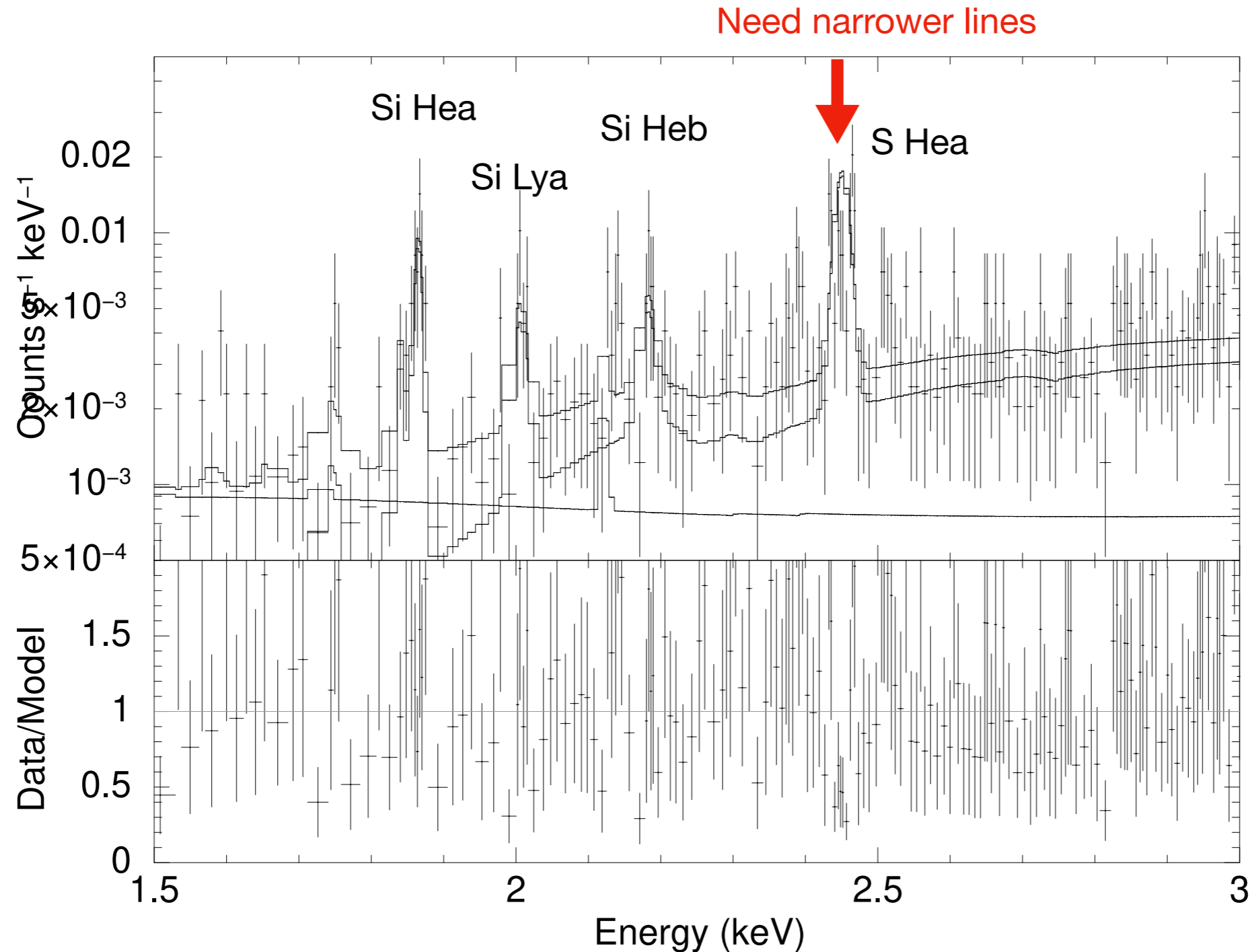
1E0102

- XRISM 2 obs. (OBSIDs 000118000, 000136000) merged vs. rgsfn_mod_tbabs_tbvarabs_2apec_line_ratios_jd_v1.9.xcm
 - original parameters



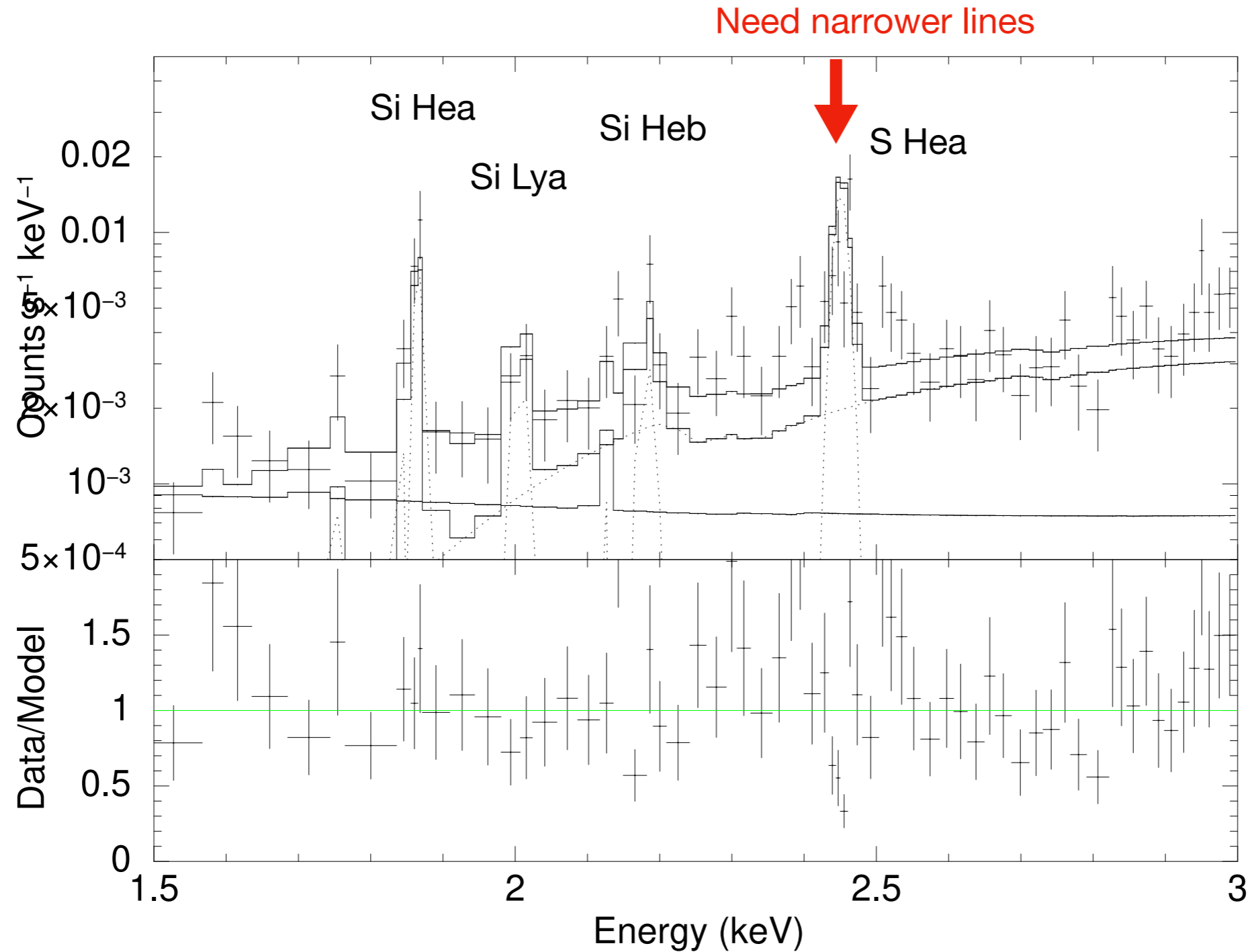
1E0102

- XRISM 2 obs. (OBSIDs 000118000, 000136000) merged vs. rgsfn_mod_tbabs_tbvarabs_2apec_line_ratios_jd_v1.9.xcm
 - original parameters



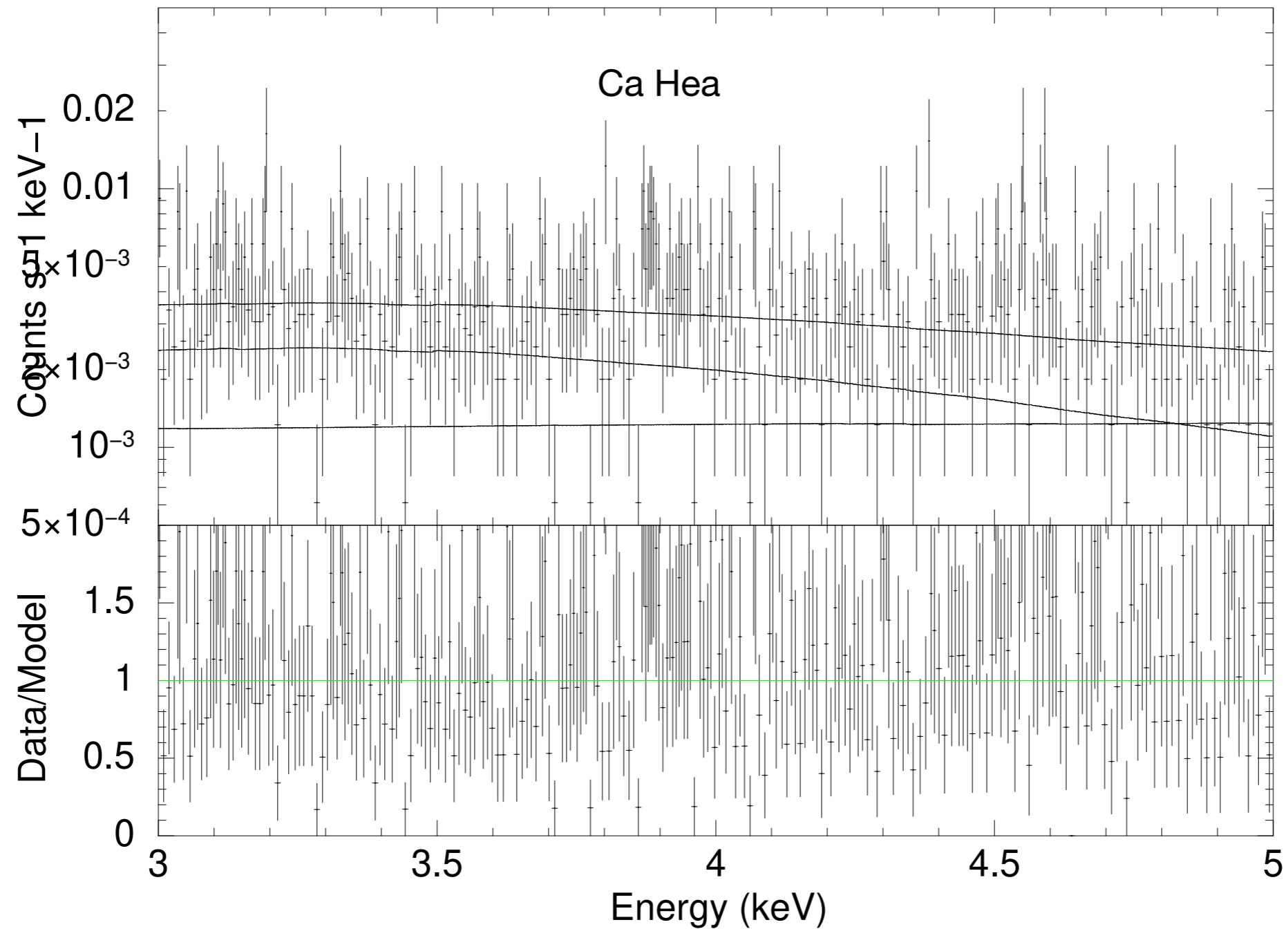
1E0102

- XRISM 2 obs. (OBSIDs 000118000, 000136000) merged vs. rgspn_mod_tbabs_tbvarabs_2apec_line_ratios_jd_v1.9.xcm
 - original parameters

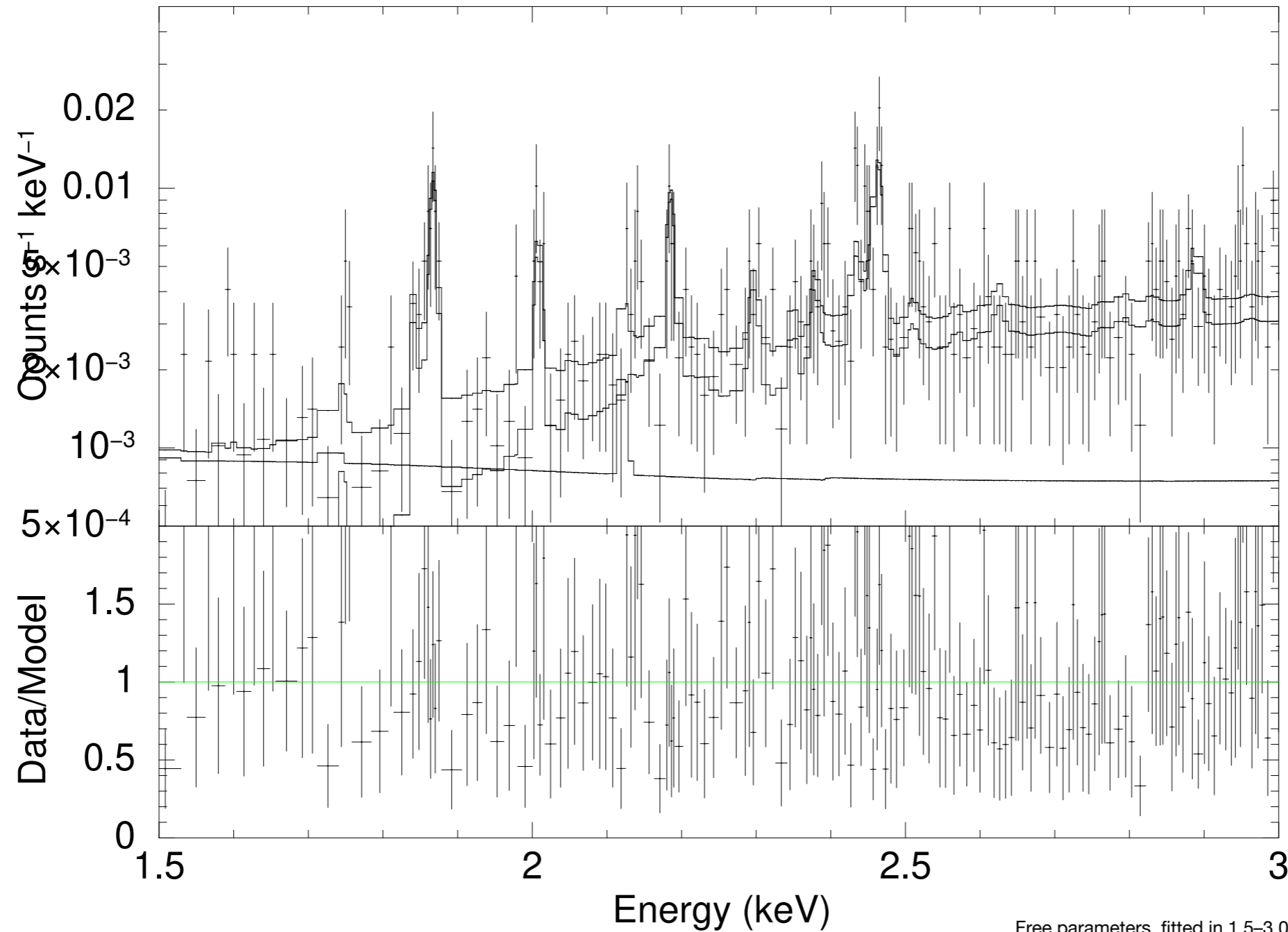


1E0102

- XRISM 2 obs. (OBSIDs 000118000, 000136000) merged vs. rgsfn_mod_tbabs_tbvarabs_2apec_line_ratios_jd_v1.9.xcm
 - original parameters



1E0102

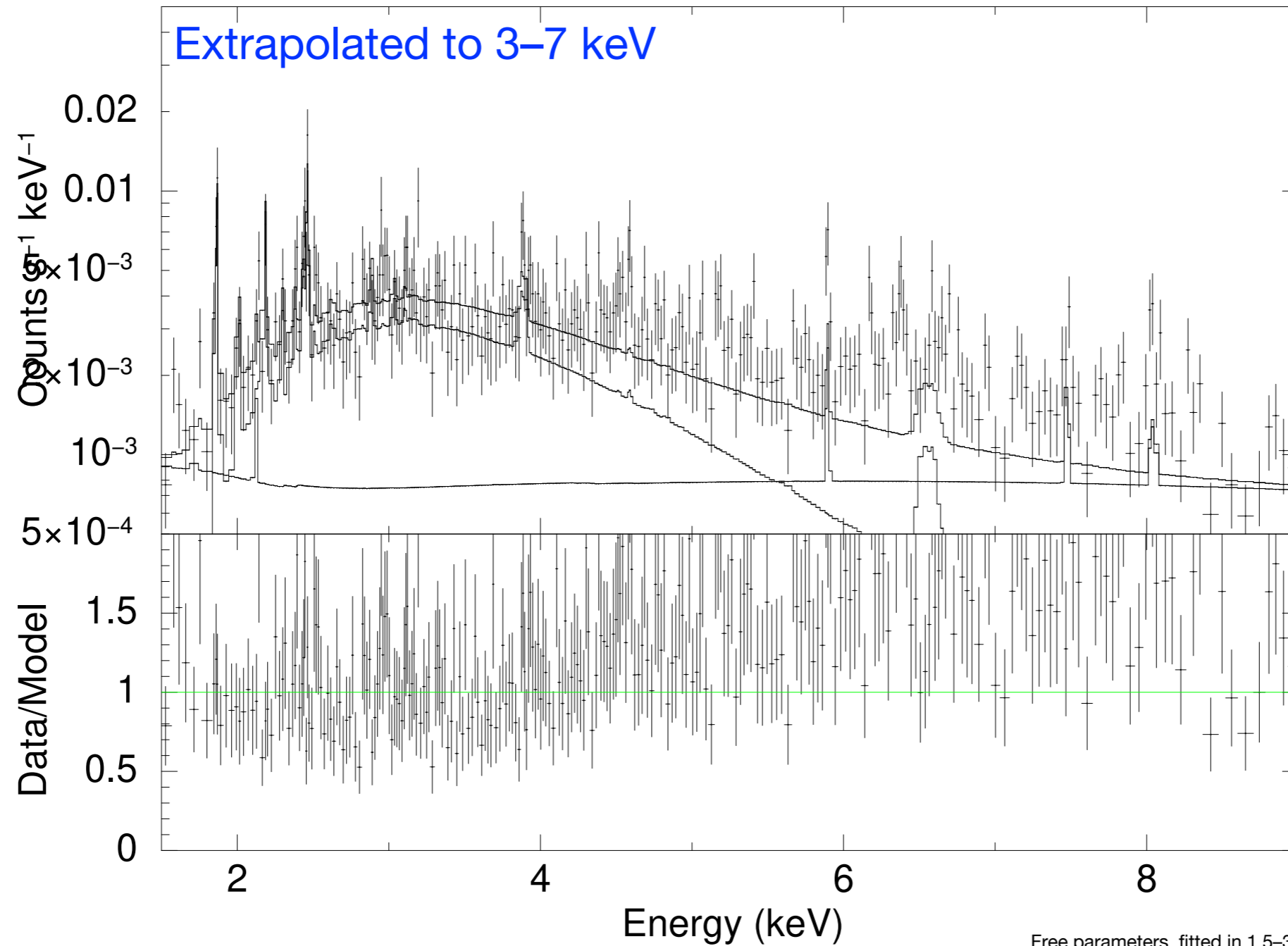


- Model: 1 kT bvpshock
 - best-fit redshift: $\sim -1.2e-3 = -400$ km/s
 - best-fit broadening: ~ 600 km/s

Free parameters, fitted in 1.5–3.0 keV

Model		Component	Parameter	Unit	Value
2	2	bvrnei	kT	keV	1.54695 +/- 0.451706
11	2	bvrnei	Si		1.02841 +/- 0.413929
12	2	bvrnei	S		0.336824 +/- 0.138484
13	2	bvrnei	Ar		7.75547E-10 +/- 94.2936
17	2	bvrnei	Tau	s/cm ³	7.60127E+10 +/- 5.32099E+10
18	2	bvrnei	Redshift		-1.17833E-03 +/- 4.21924E-04
19	2	bvrnei	Velocity	km/s	661.241 +/- 114.849
20	2	bvrnei	norm		3.73843E-02 +/- 1.82589E-02

1E0102



- Model: 1 kT bvpshock
 - best-fit redshift: $\sim -1.2e-3 = -400$ km/s
 - best-fit broadening: ~ 600 km/s

Free parameters, fitted in 1.5–3.0 keV
 Model TBabs<1>*bvrnei<2> Source No.: 1 Active/On

Model	Component	Parameter	Unit	Value
par	comp			
2	2	bvrnei	kT	keV 1.54695 +/- 0.451706
11	2	bvrnei	Si	1.02841 +/- 0.413929
12	2	bvrnei	S	0.336824 +/- 0.138484
13	2	bvrnei	Ar	7.75547E-10 +/- 94.2936
17	2	bvrnei	Tau	s/cm ³ 7.60127E+10 +/- 5.32099E+10
18	2	bvrnei	Redshift	-1.17833E-03 +/- 4.21924E-04
19	2	bvrnei	Velocity	km/s 661.241 +/- 114.849
20	2	bvrnei	norm	3.73843E-02 +/- 1.82589E-02

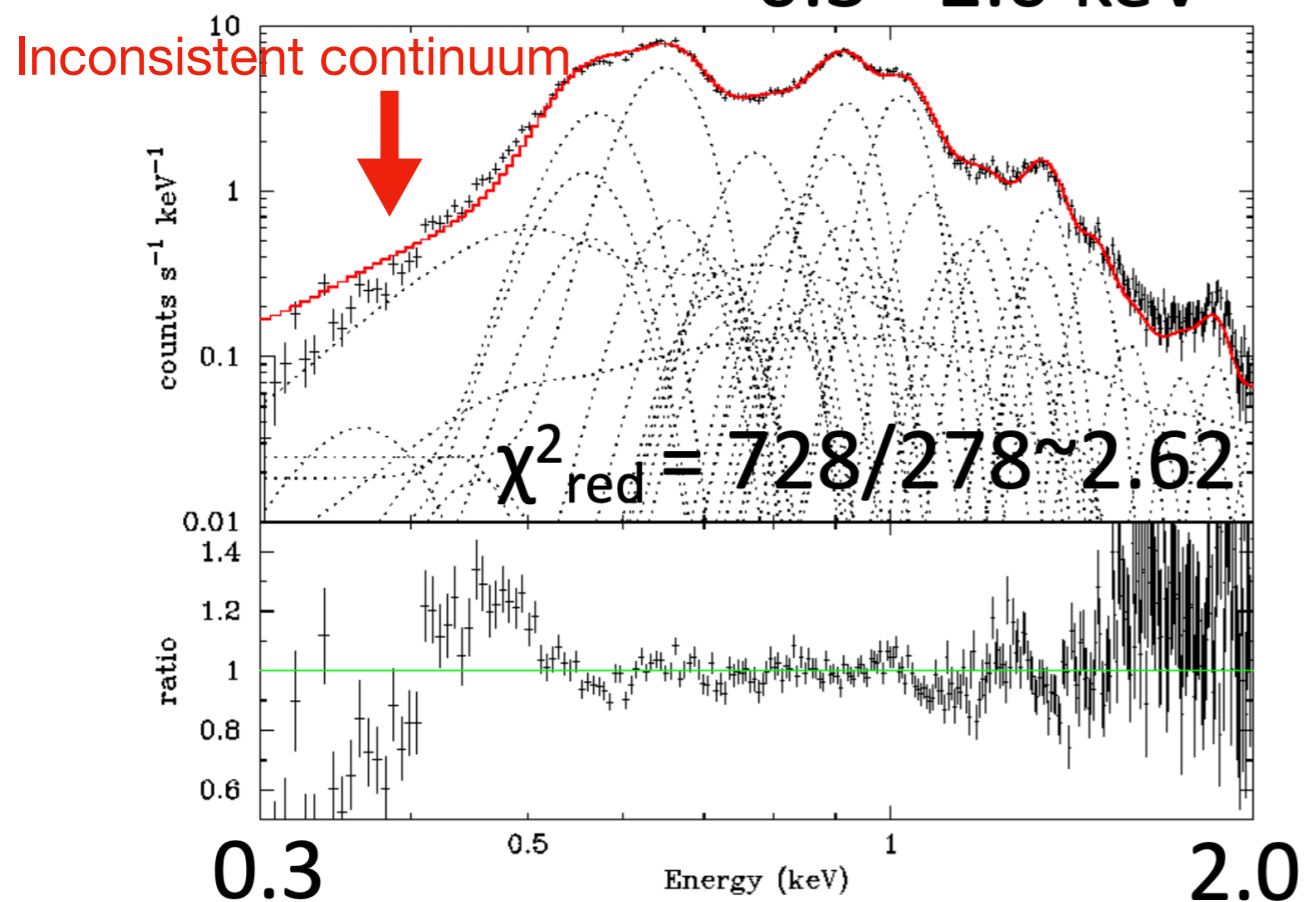
1E0102 Xtend status

- XRISM 4 obs. (OBSIDs 101007010/11=full win, 101008010/11=1/8 win) vs. IACHEC model
 - original parameters
- <0.5 keV show some residuals

Full window (101007010/11)

新CALDB

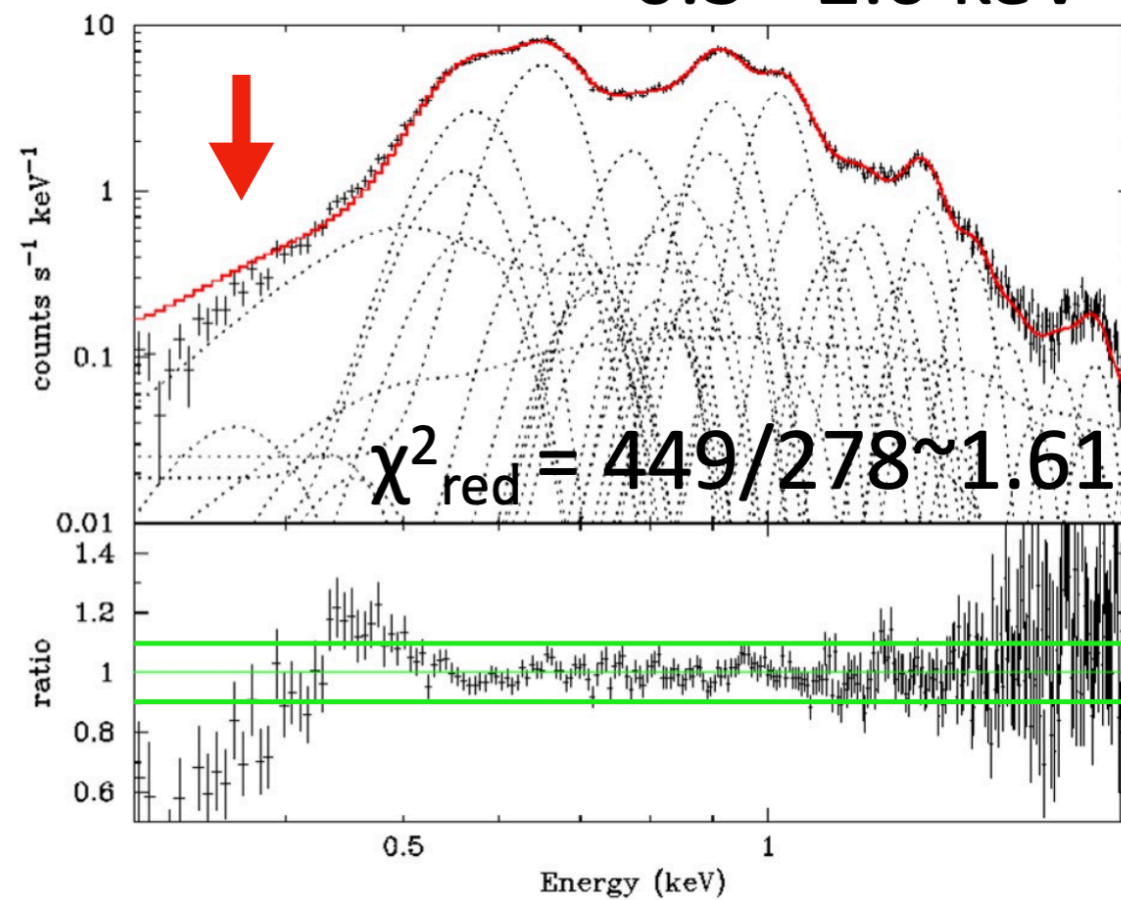
0.3 - 2.0 keV



1/8 window (101008010/11)

新CALDB

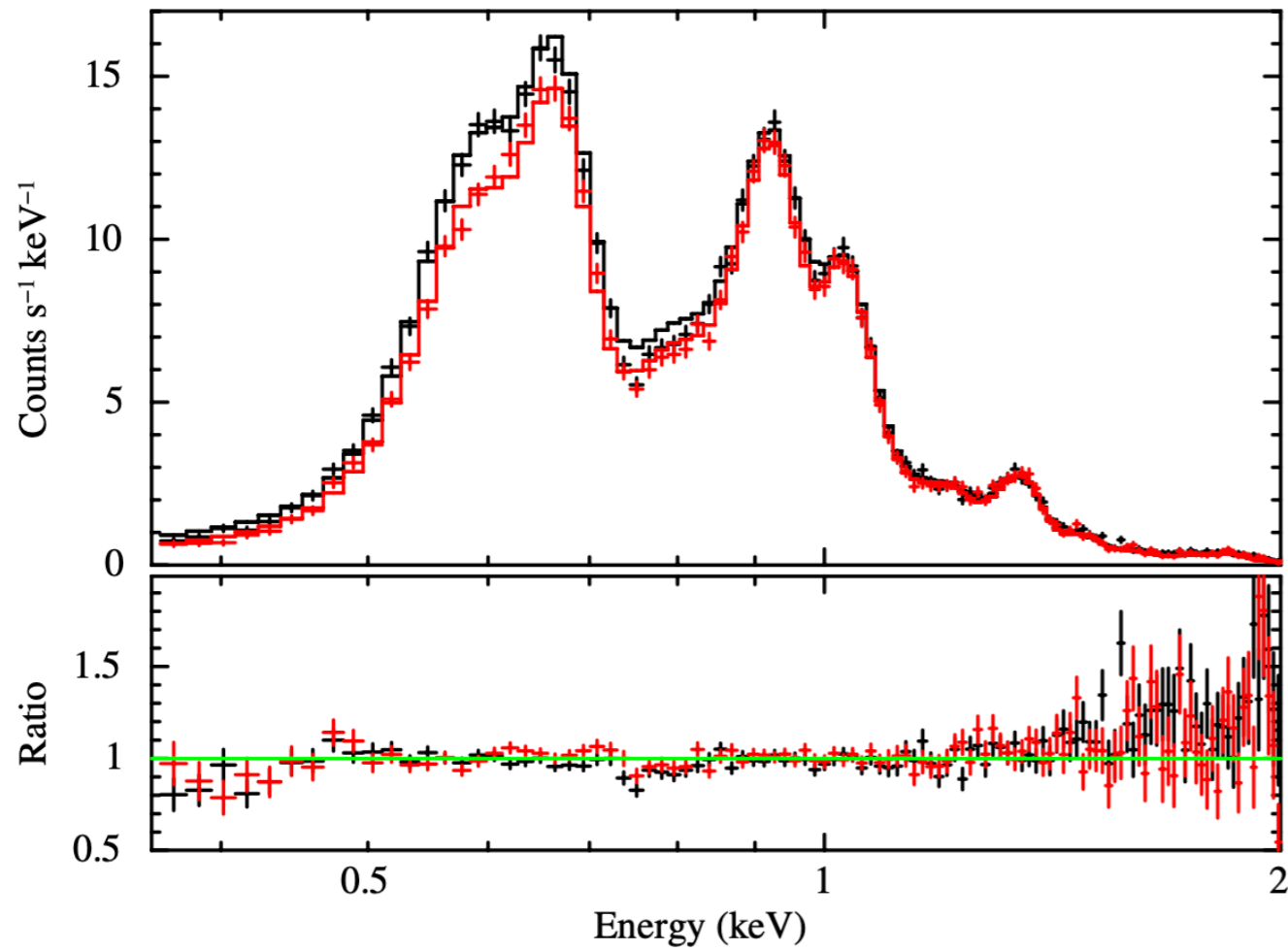
0.3 - 2.0 keV



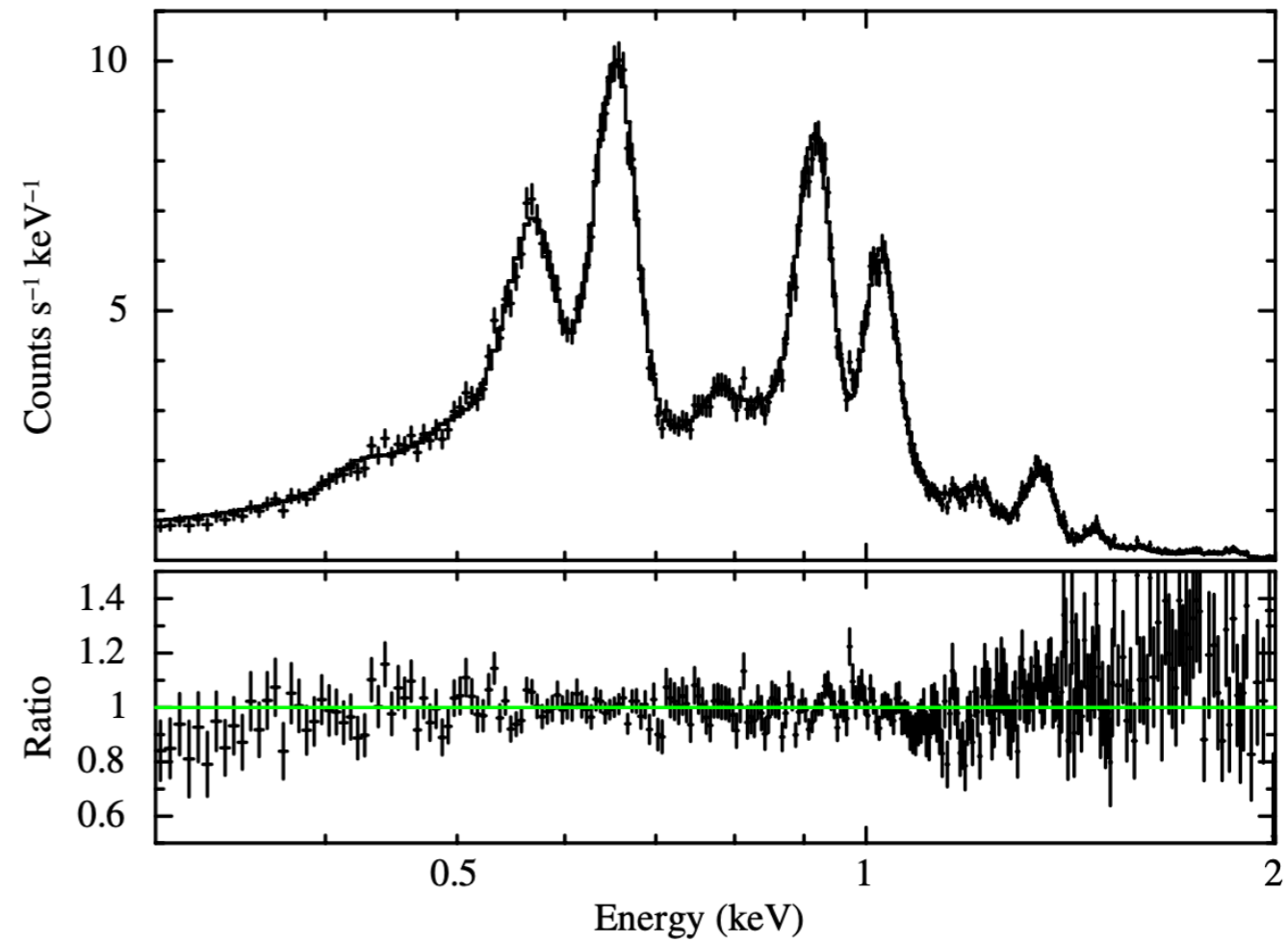
1E0102 Xtend status

- Plucinsky et al., 2017 show similar residuals?

Chandra ACIS-S3



XMM MOS



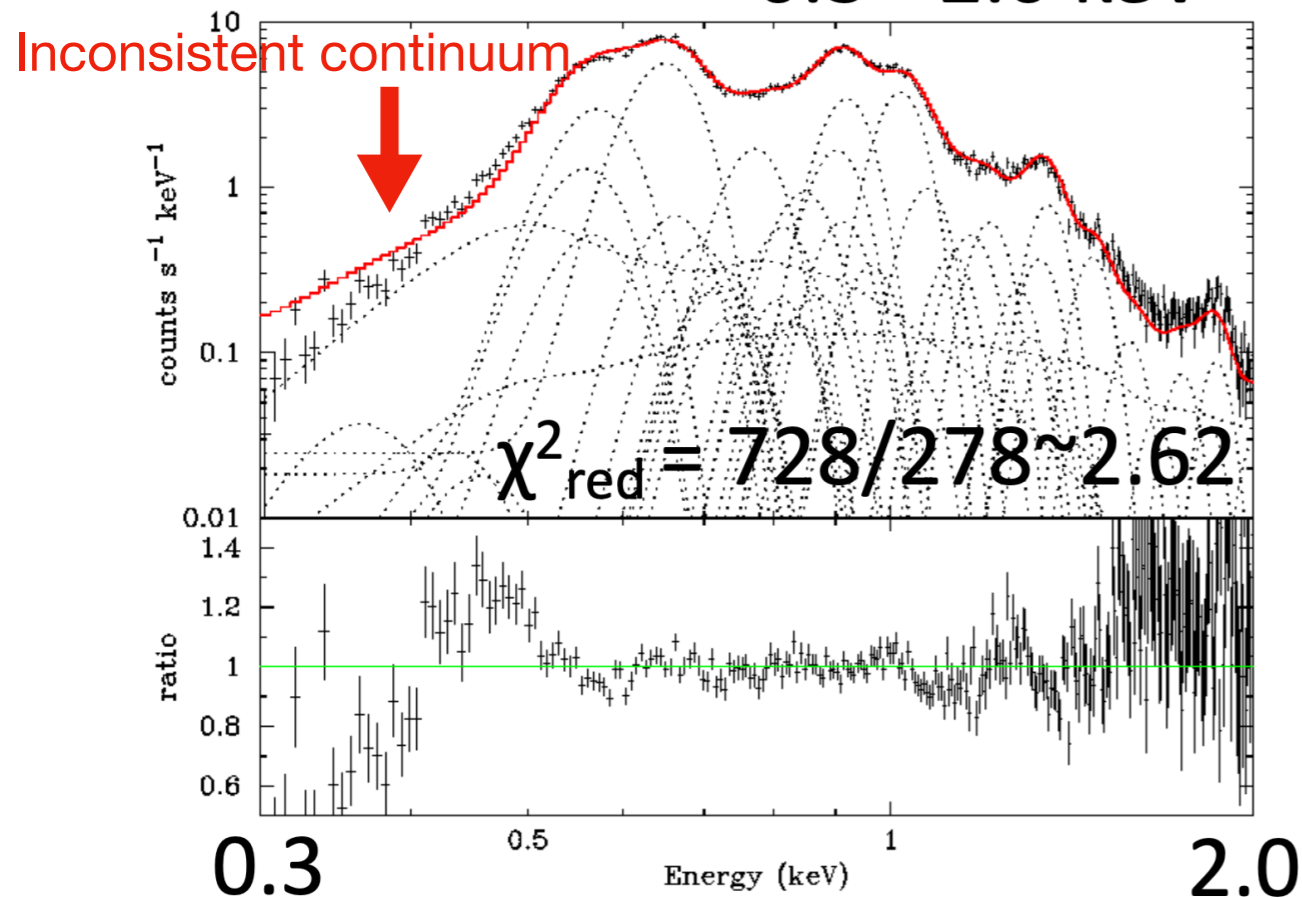
1E0102 Xtend status

- XRISM 4 obs. (OBSIDs 101007010/11=full win, 101008010/11=1/8 win) vs. IACHEC model
 - original parameters
- <0.5 keV show some residuals

Full window (101007010/11)

新CALDB

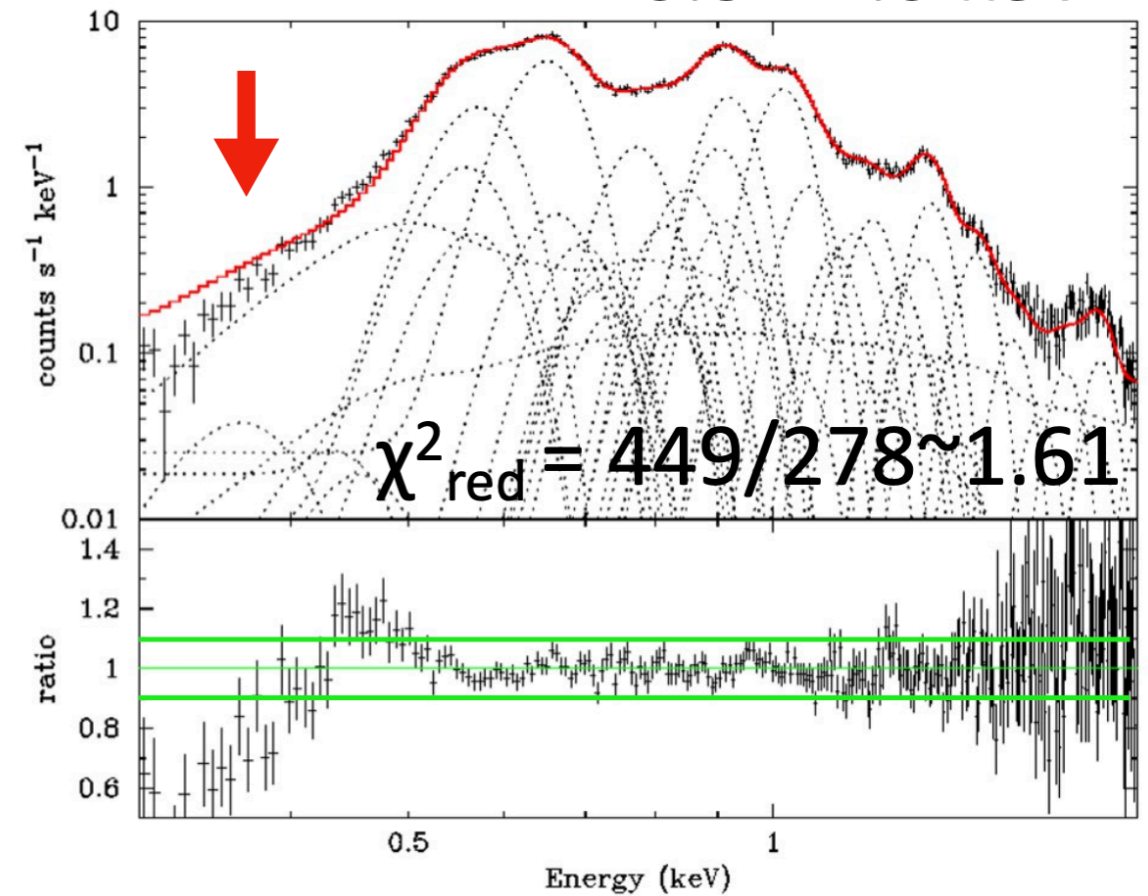
0.3 - 2.0 keV



1/8 window (101008010/11)

新CALDB

0.3 - 2.0 keV



1E0102 Xtend status

- XRISM 4 obs. (OBSIDs 101007010/11=full win, 101008010/11=1/8 win) vs. IACHEC model

The Mg XI He-alpha triplet is described by parameters 29-37:

par	comp						
29	11	gaussian	LineE	keV	1.35220	frozen	
30	11	gaussian	Sigma	keV	5.91820E-03	frozen	
31	11	gaussian	norm		2.31058E-04	= p37*2.12622	
32	12	gaussian	LineE	keV	1.34314	= p29*0.99330	
33	12	gaussian	Sigma	keV	5.91820E-03	= p30	
34	12	gaussian	norm		2.75264E-05	= p37*0.25330	
35	13	gaussian	LineE	keV	1.33111	= p29*0.98440	
36	13	gaussian	Sigma	keV	5.91820E-03	= p30	
37	13	gaussian	norm		1.08671E-04	frozen	

Cas A A/Is?

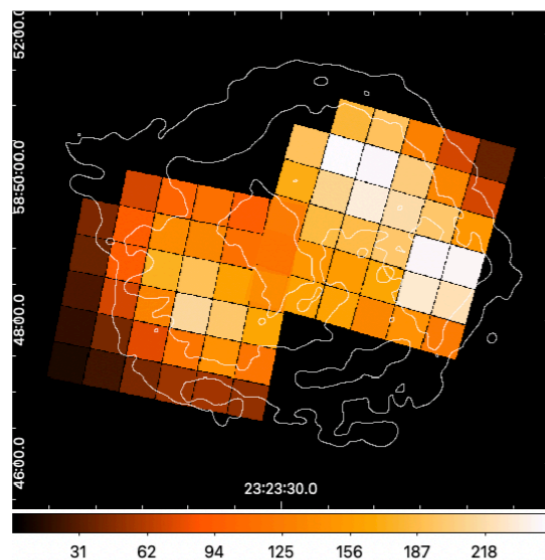
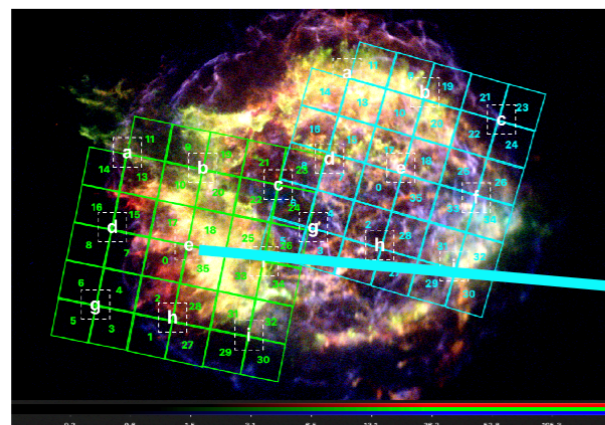
- How to use Resolve spectra ?
 - possibly apply 2x2 (or larger) Resolve pixel regions to Chandra, XMM, etc.



XRISM Observations of Cas A

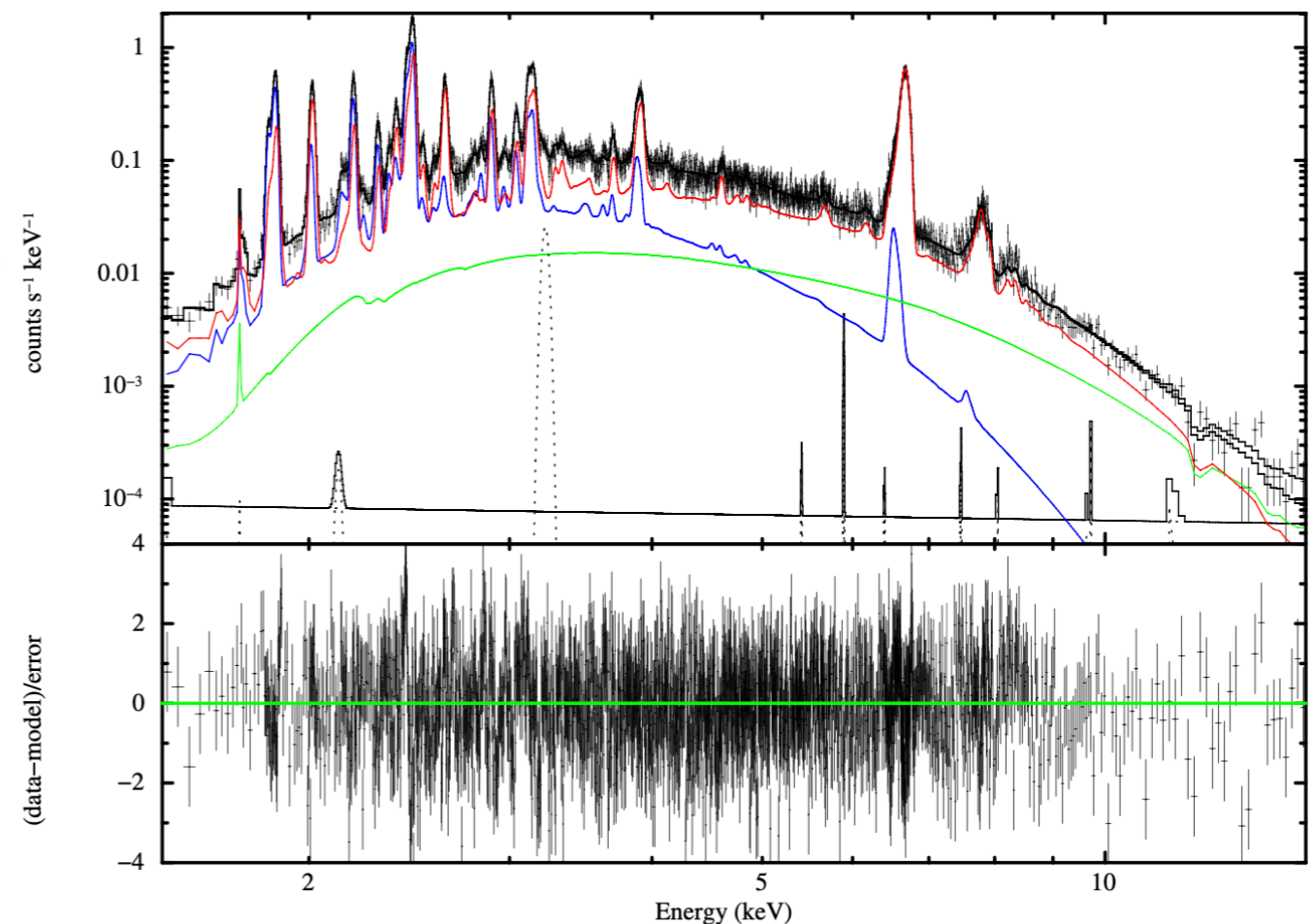
CXC

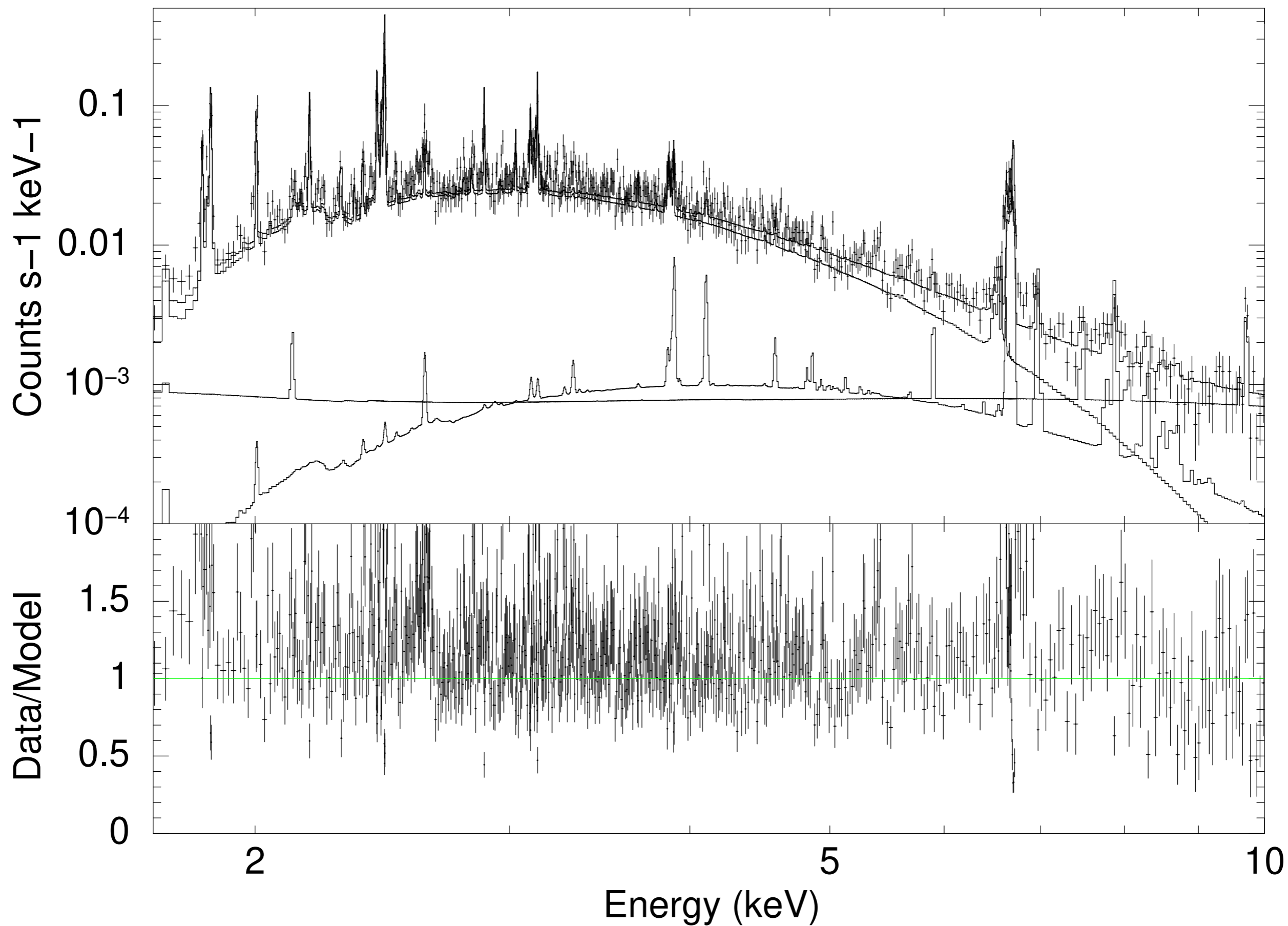
- Three XRISM papers on Cas A (arXiv:2504.03268, arXiv:2503.23640, arXiv:2505.04691), two more under review
- Velocity shifts and broadening are necessary. We have a semi-empirical model that fits the 1.5-10.0 keV band
- We will work on making this an IACHEC model



Resolve

Cas A SE: xa000129000rsl Hp_2x2pixe-rbopt, CStat=3821.5, DOF=3350, Chi=3761.5
bvvrnei+pow+zgauss+bvvpshock, kT1=1.041 keV, kT2=2.848 keV, AtomDB 3.0.9, corarf





Fe-55 irradiating periods

- Source emission should exist even in Fe-55 irradiating periods
- but the source is too faint

