Preliminary analysis of the 25 Ks observation of the X-ray emission from the central regions of the Pictor A

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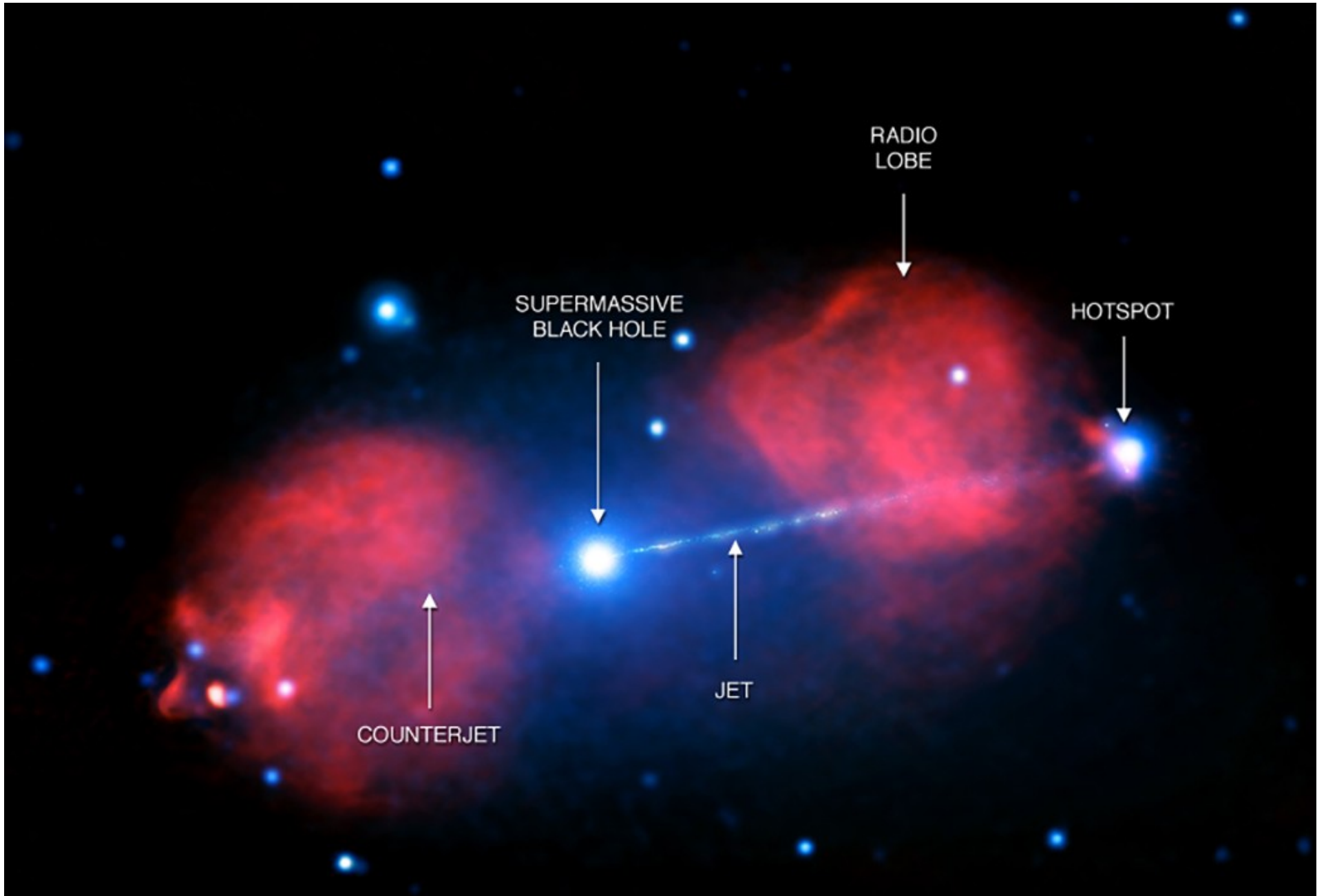17th July 2018

Talk about,

- Pictor A
- Chandra observations of Pictor A
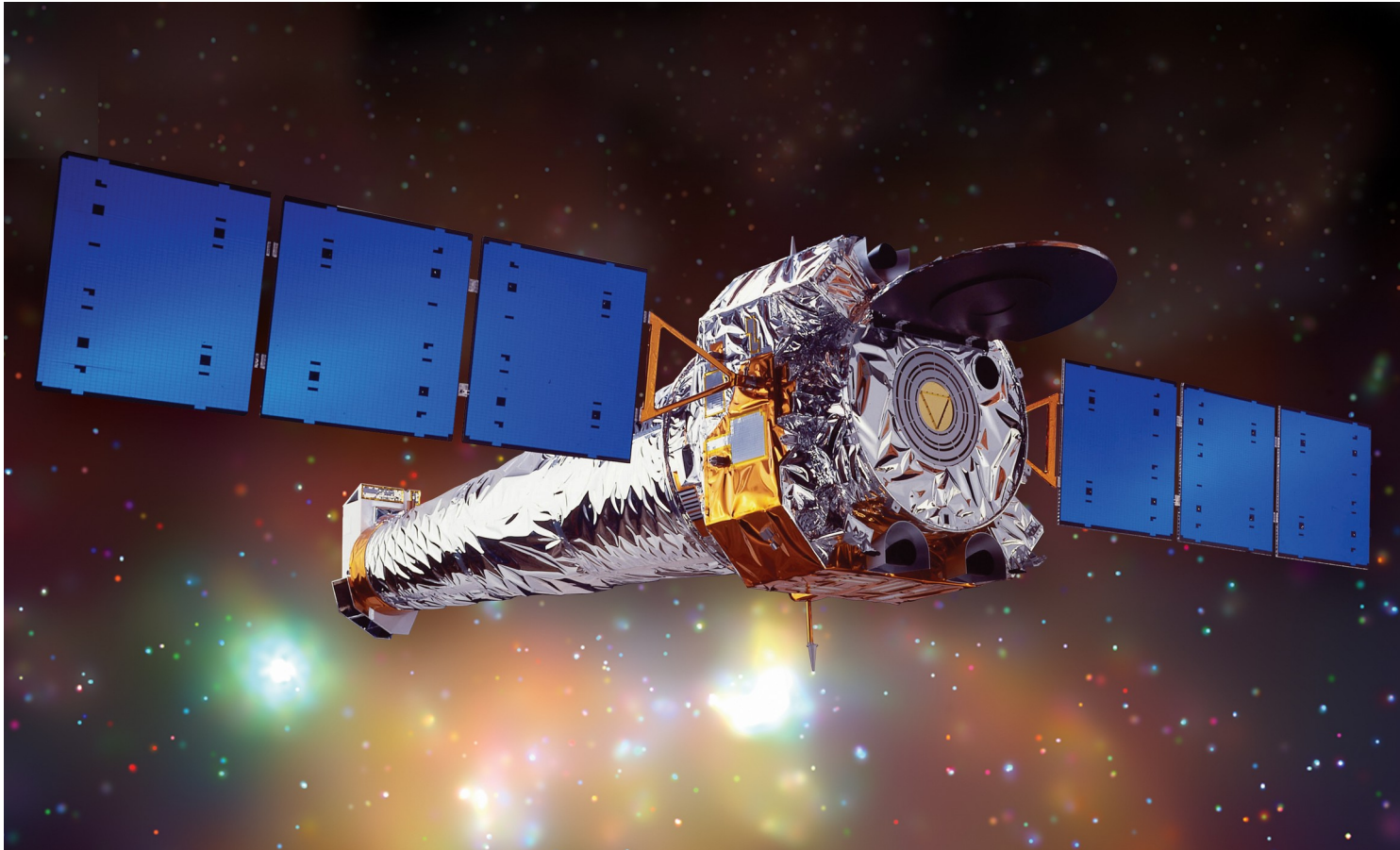- ObsID – 346
- Future work

Talk about,

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- Chandra observations of Pictor A
- ObsID – 346
- Future work

Pictor A

Chandra Observations of PicA

- ➢ Chandra is one of the Great Observatories.

- ➢ Chandra is sensitive to X-ray sources 100 times fainter than any previous X-ray telescope.

- ➢ Resolution - 0.5 arcsec

Chandra data of Pictor A

| OBsId	Obs date	Exp (ks)	DETNAME	SIM_Z	FP (K)	Sepn (′)	PA
346	2000-01-18	25.8	ACIS-23678	-190.143	164.0	0.7	+90
3090	2002-09-17	46.4	ACIS-235678	-190.143	153.4	2.7	-81
4369	2002-09-22	49.1	ACIS-235678	-190.140	153.4	2.7	-81
12039	2009-12-07	23.7	ACIS-235678	-190.140	153.4	0.6	+87
12040	2009-12-09	17.3	ACIS-235678	-190.140	153.4	0.6	+87
11586	2009-12-12	14.3	ACIS-235678	-190.140	153.4	0.6	+87
14357	2012-06-17	49.3	ACIS-235678	-190.140	153.4	0.4	+142
14221	2012-11-06	37.5	ACIS-235678	-190.140	153.6	0.3	+83
15580	2012-11-08	10.5	ACIS-235678	-190.143	153.4	0.3	+83
15593	2013-08-23	49.3	ACIS-235678	-190.143	153.4	0.2	+123
14222	2014-01-17	45.4	ACIS-235678	-190.140	153.9	0.5	+99
14223	2014-04-21	50.1	ACIS-235678	-190.143	153.4	0.5	+128
16478	2015-01-09	2 6.8	ACIS-235678	-190.140	153.8	0.5	+101
17574	2015-01-10	18.6	ACIS-235678	-190.140	156.7	0.5	+101

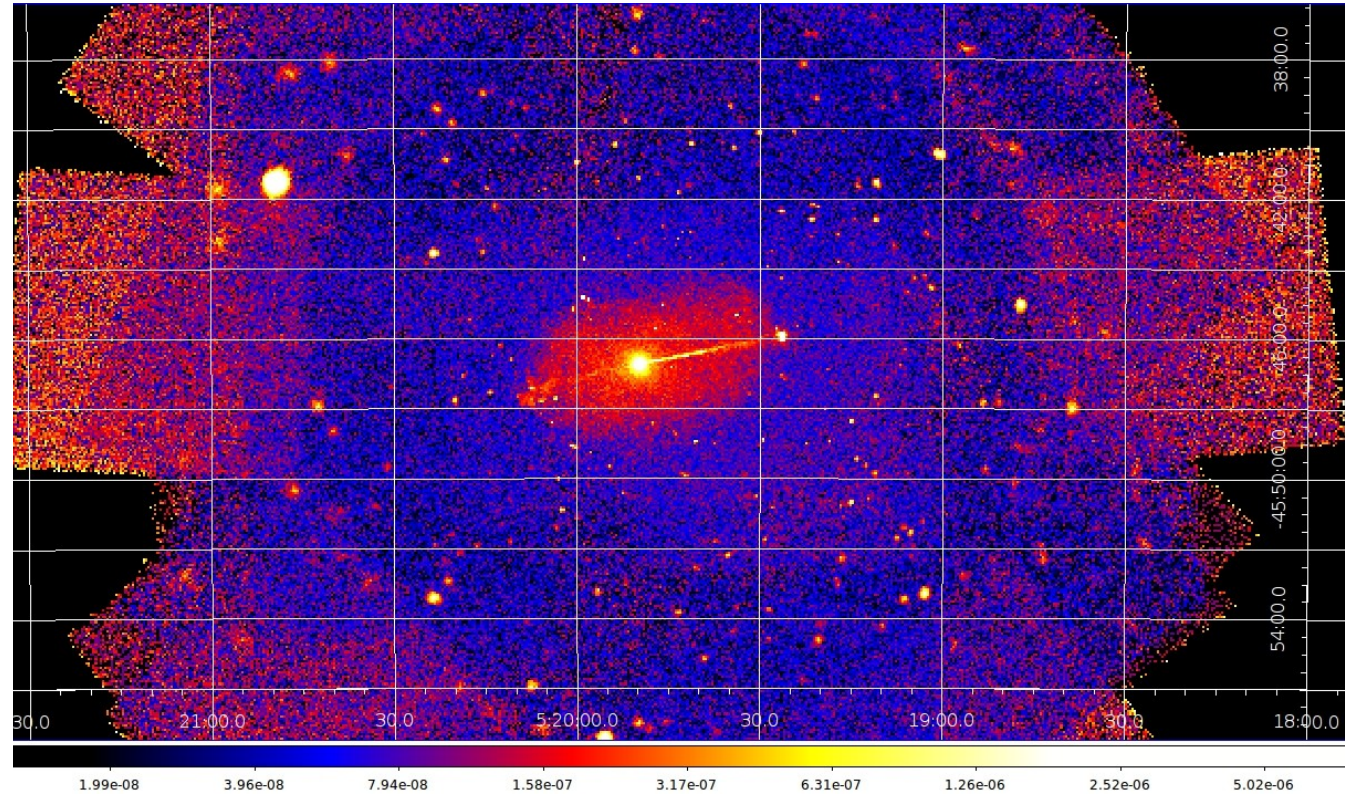# Chandra Observations of PicA

Difficulties:

1. Multiple pointings with different configuration

2. PSF not uniform

3. pileup in the core

Chandra Observations of PicA

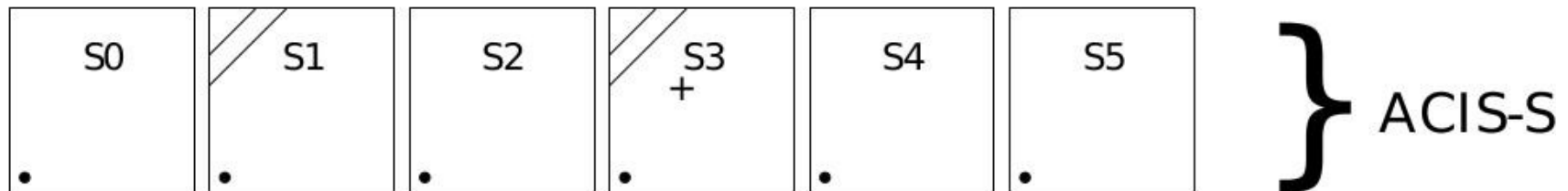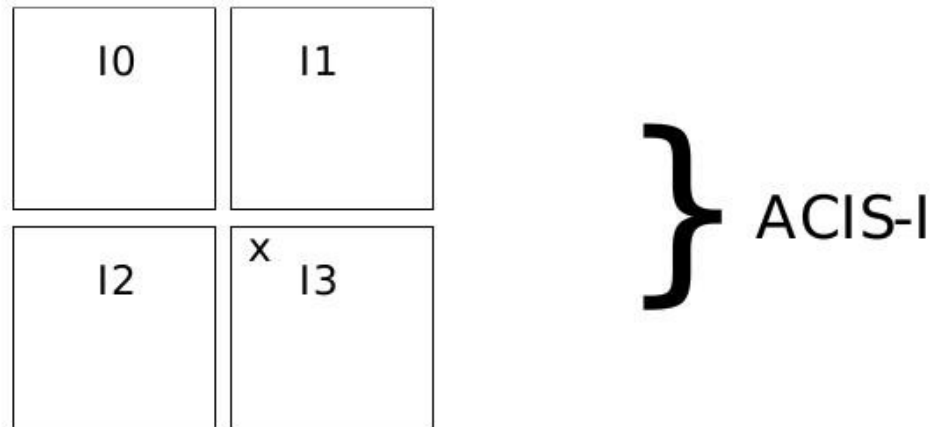## 1.Multiple pointings with different configuration
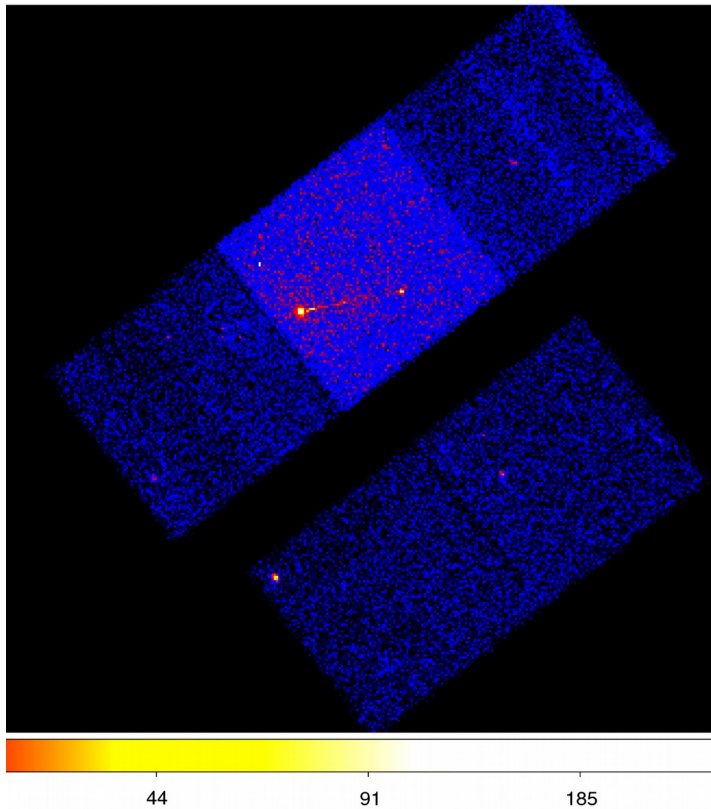
ObsID-346

Merged data of 14 ObsID

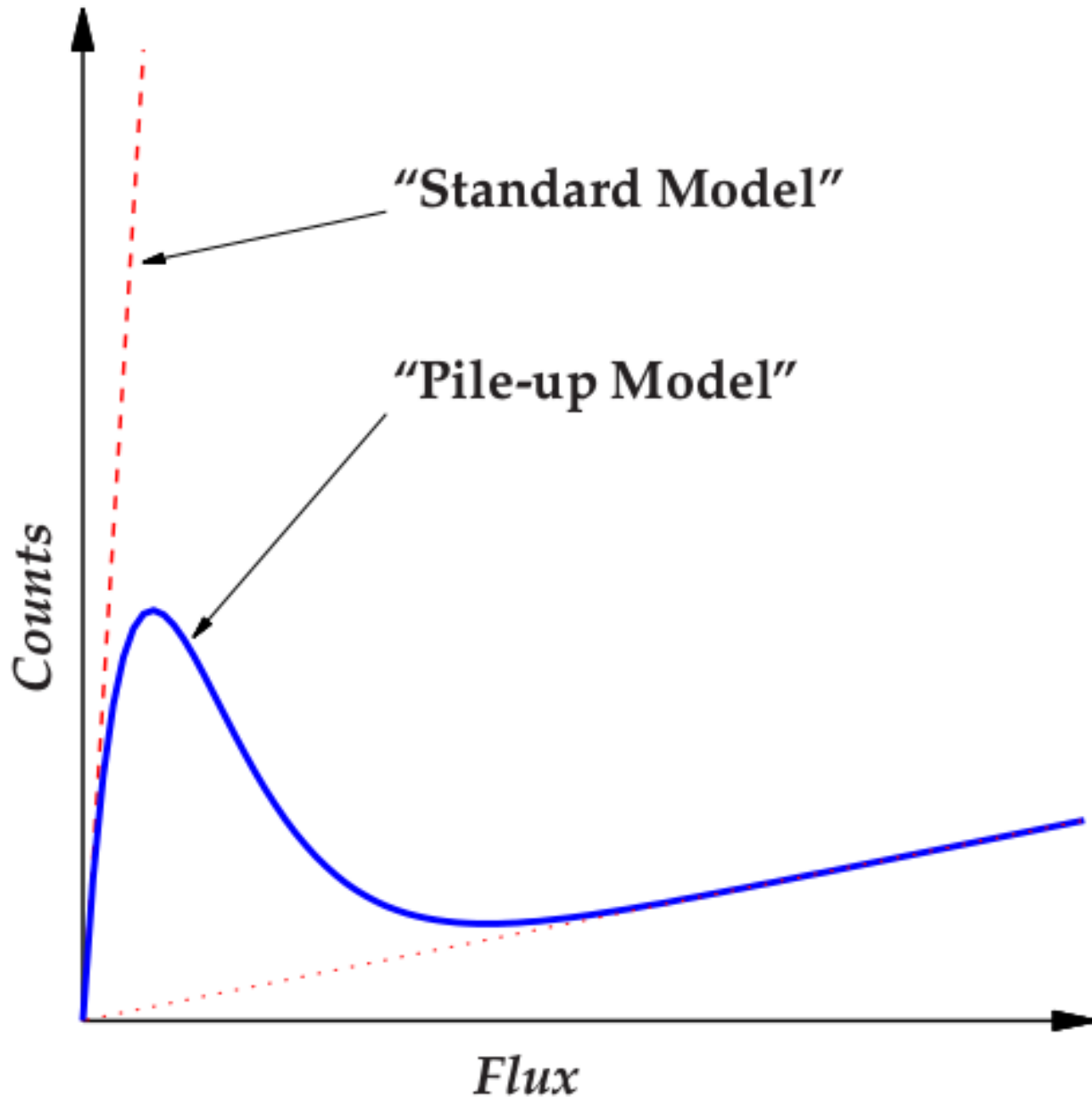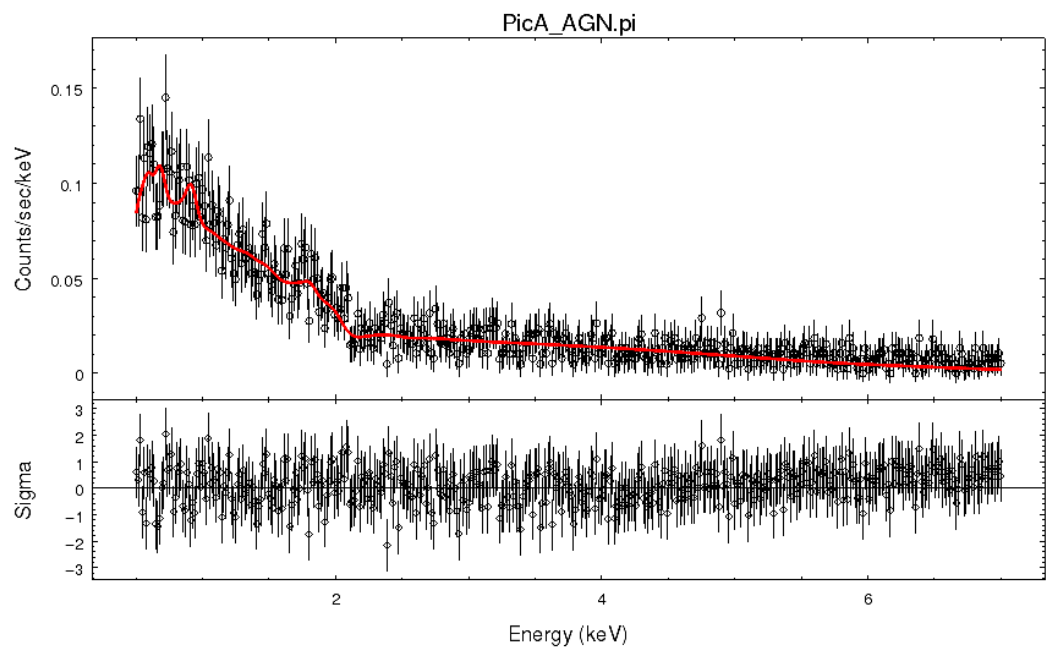# Chandra Observations of PicA

2.PSF

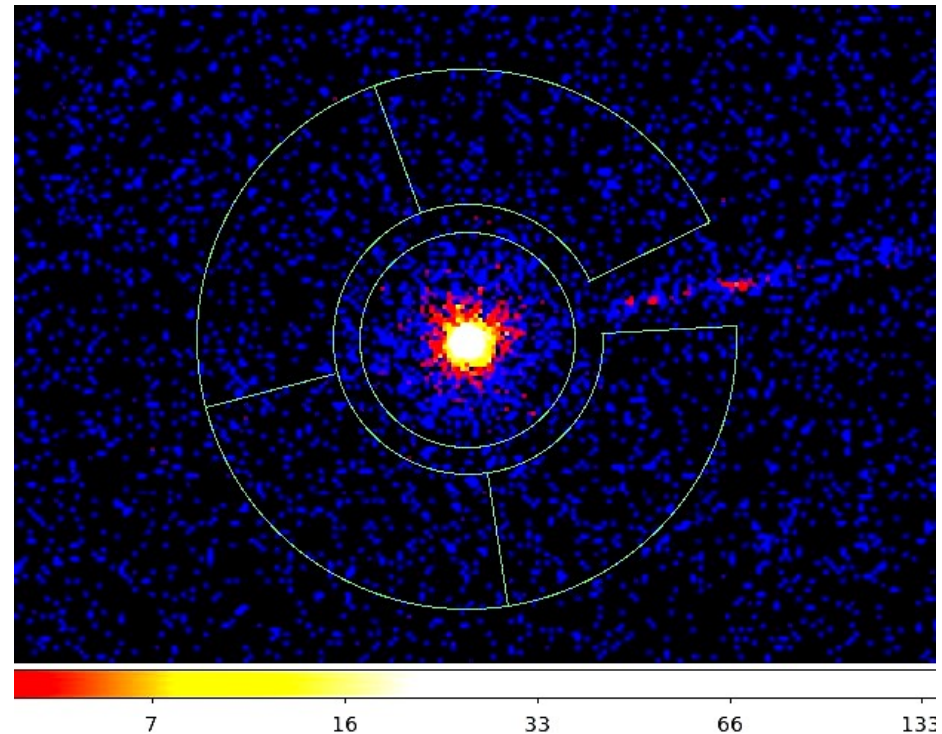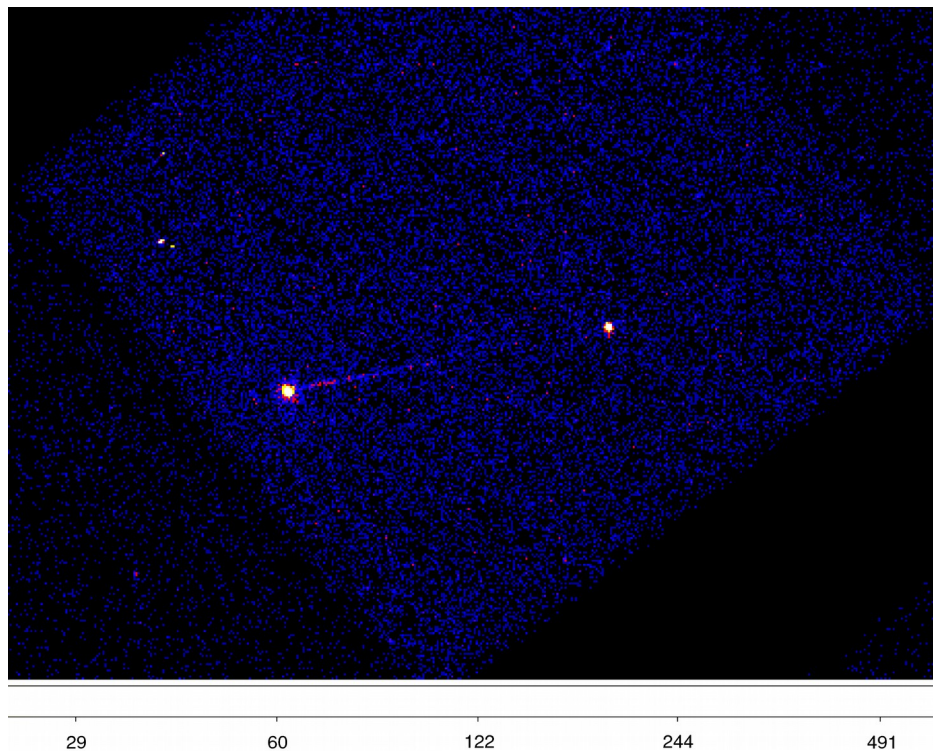➢ The best Astrophysical X-ray mirrors ever made
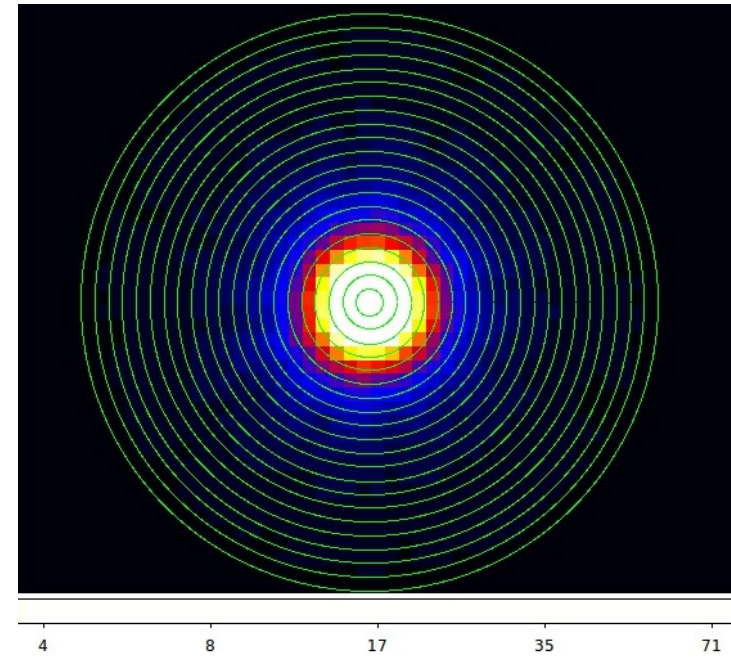
➢ 1" resolution

➢ ACIS layout

Chandra Observations of PicA

3.Pileup in the core

"Standard Model"

"Pile-up Model"

Counts

Flux

PicA_AGN.pi
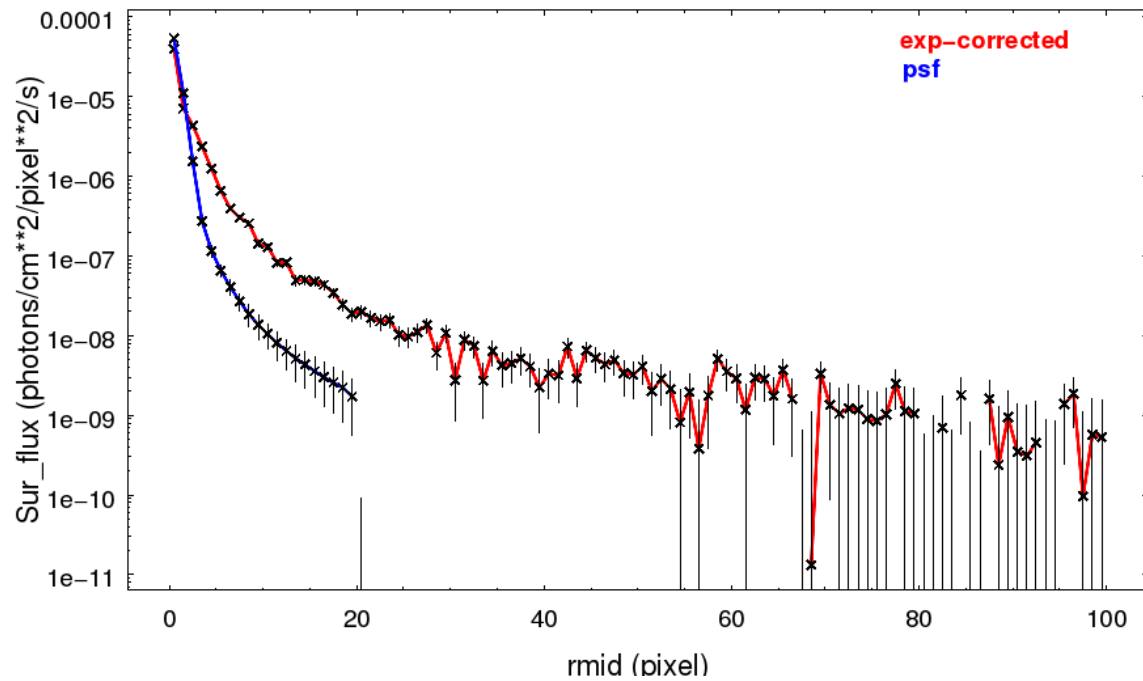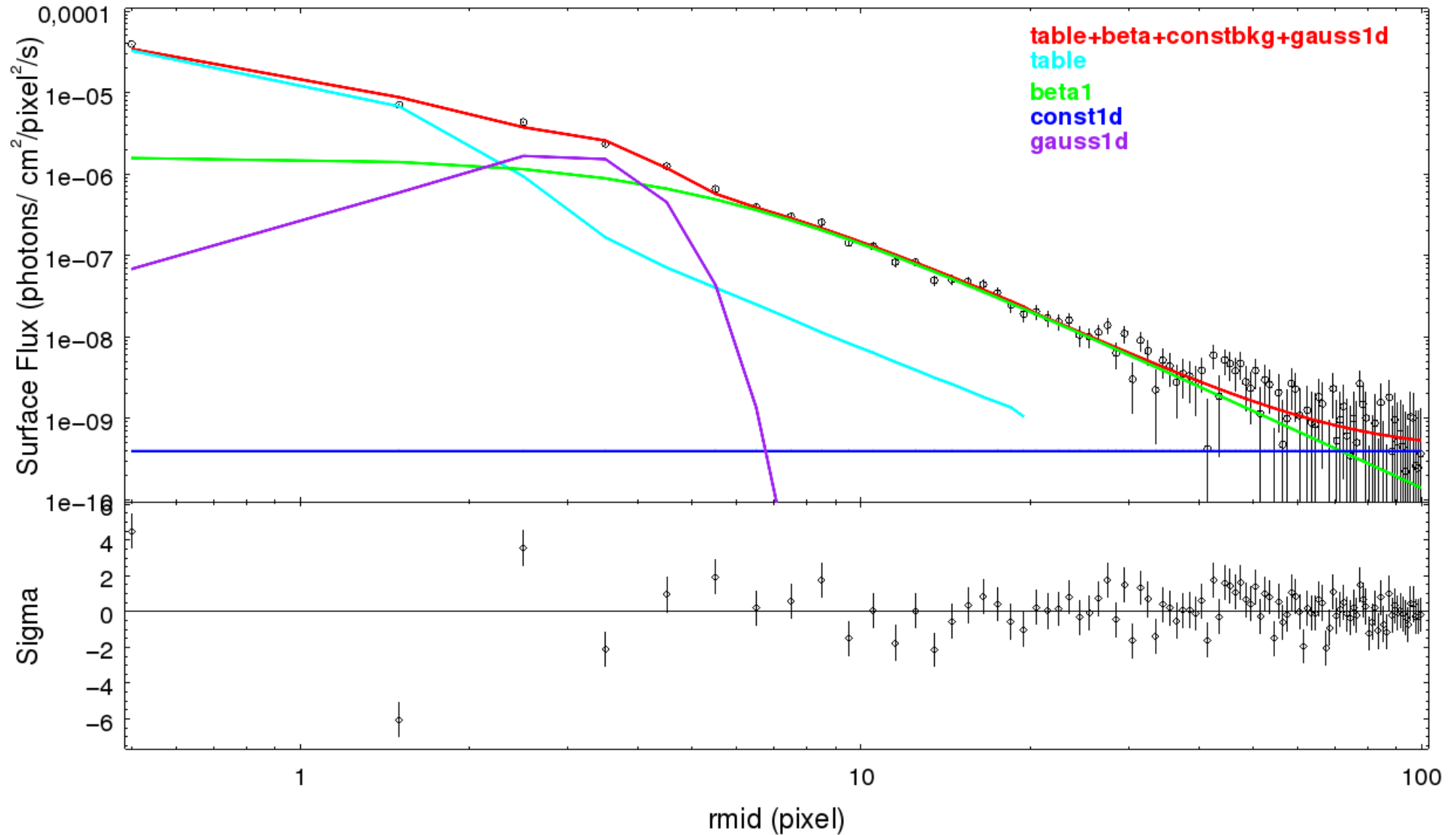
ObsID 346-Surface brightness profile
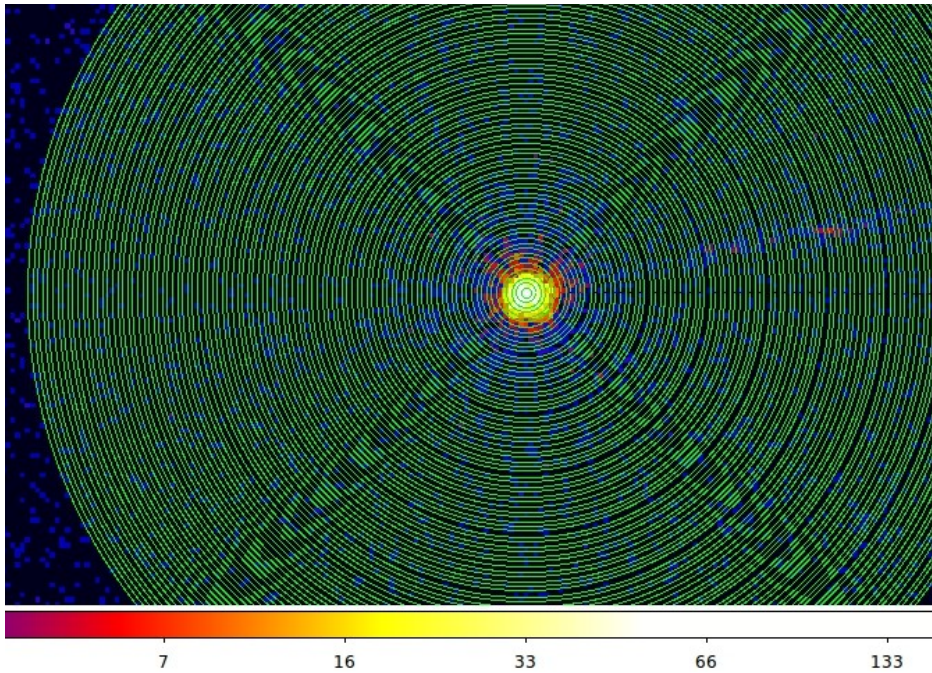
Radial profile of Pictor A – ObsID 346 (1pix)

ObsID 346- Model fitting
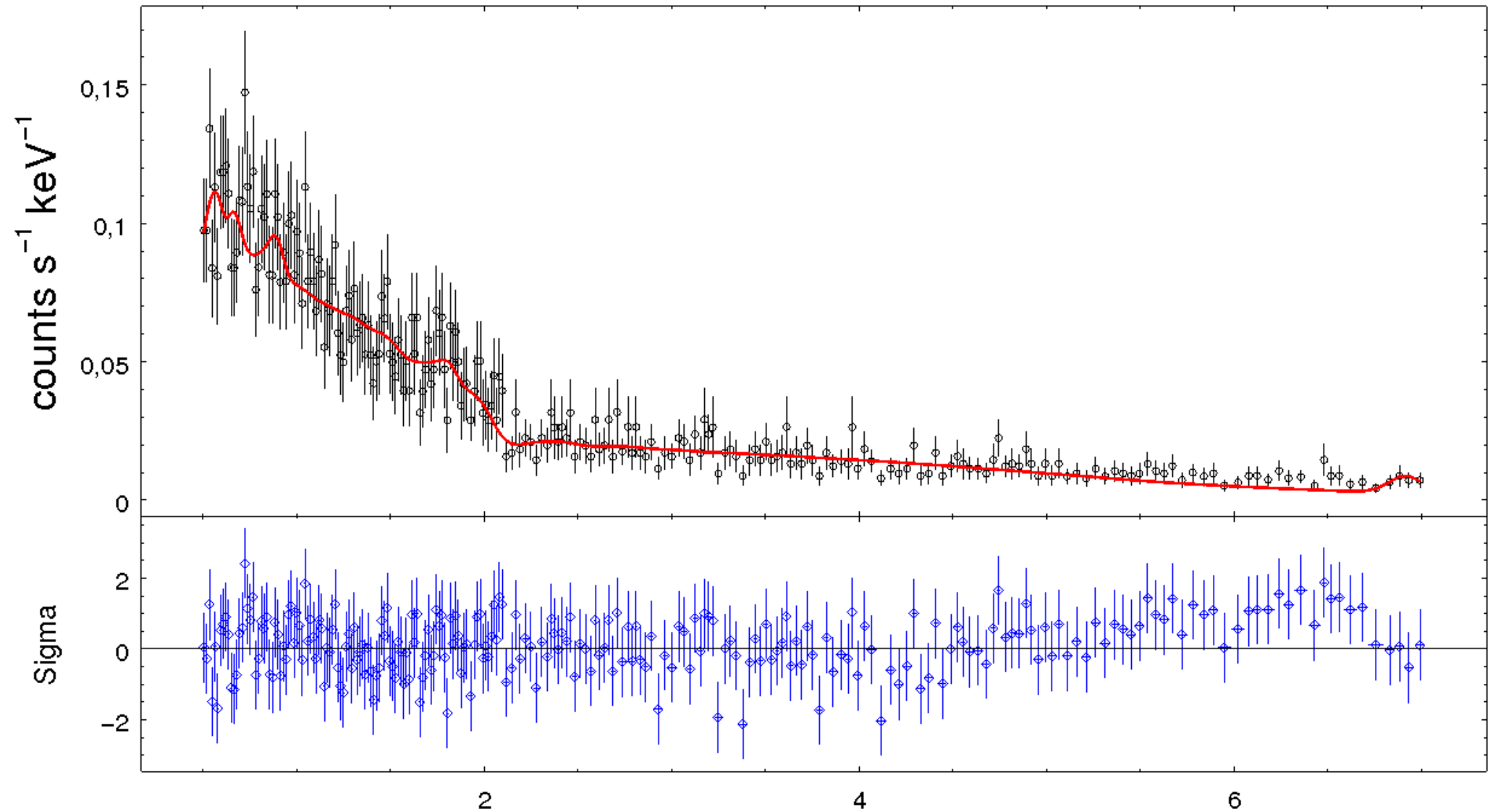## PSF pileup – Table model + beta + gaussian

Radial profile of Pictor A – ObsID 346(1pix)

ObsID 346- Spectral fitting

346 – abs*(PL1+zgauss1+(zabs2*+Apec2)) & abs*(PL0+(zabs3*Apec3))

Future work

➢ The next step of the analysis will include updated PSF simulations including the pileup effect for all Observations.

➢ With the properly characterized PSF shape, we will update also the source (AGN) and the background (host galaxy, plus extended lobes) regions, and perform a more detailed spectral modeling, constraining also the presence of the iron line in the source spectrum.

➢ The image deconvolution and the spectral modeling for the large-scale jet and the extended lobes will also be performed.

Thank you