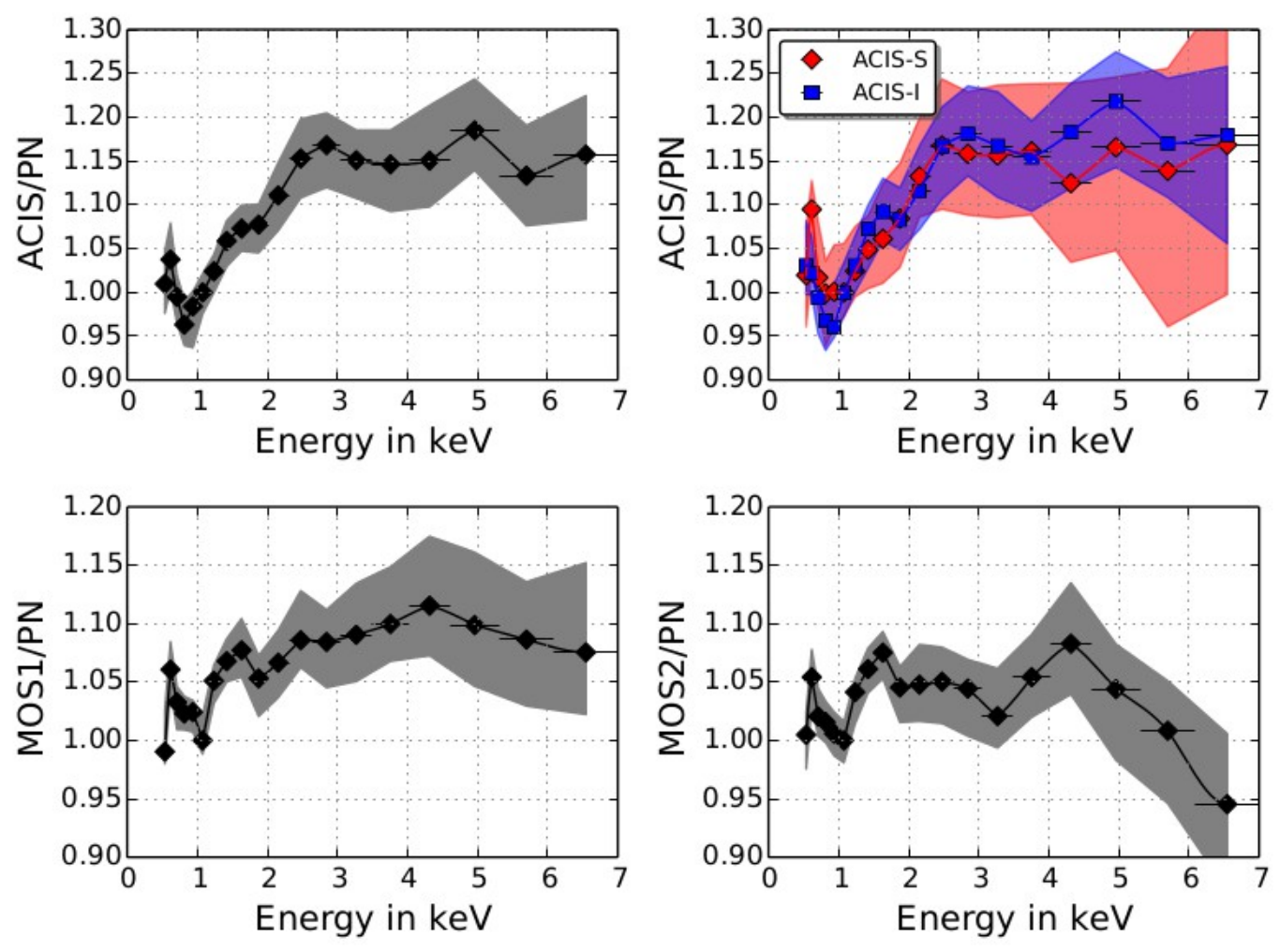
2) modarf tool

HIFLUGCS

Schellenberger et al., 2015, A&A, 575, 30

$$R_{i\,7\,pn} = \frac{data_i}{model_{pn} \otimes resp_i} \times \frac{model_{pn} \otimes resp_{pn}}{data_{pn}}$$



Spline parameters for stack residuals ratio = effective area cross-cal uncertainty

Energy	ACIS/PN		MOS1/PN		MOS2/PN	
[keV]	y	y''	y	y''	y	y''
0.54	1.01	-14.69	0.99	-9.32	1.00	-11.37
0.62	1.04	-0.81	1.06	-1.23	1.05	-1.08
0.71	0.99	0.02	1.03	0.16	1.02	0.32
0.81	0.96	0.49	1.02	0.20	1.02	-0.02
0.94	0.98	-0.06	1.02	-0.34	1.01	-0.06
1.08	1.00	0.02	1.00	0.56	1.00	0.35
1.24	1.02	0.07	1.05	-0.23	1.04	-0.16
1.42	1.06	-0.10	1.07	0.01	1.06	0.02
1.63	1.07	-0.08	1.08	-0.18	1.08	-0.23
1.88	1.08	0.09	1.05	0.14	1.05	0.13
2.15	1.11	0.03	1.07	0.03	1.05	-0.00
2.48	1.15	-0.06	1.09	-0.07	1.05	-0.00
2.84	1.17	-0.09	1.08	0.02	1.04	-0.07
3.27	1.15	0.03	1.09	-0.00	1.02	0.12
3.76	1.15	-0.01	1.10	0.03	1.05	0.02
4.32	1.15	0.09	1.12	-0.06	1.08	-0.12
4.96	1.18	-0.17	1.10	0.01	1.04	0.05
5.70	1.13	0.15	1.09	-0.01	1.01	-0.12
6.55	1.16	-0.17	1.08	0.05	0.95	0.32

- MODARF - Python-Script for modification of XMM-Newton/EPIC and Chandra/ACIS effective areas according to the stack residual ratios in Schellenberger et al. 2014 , arXiv:1404.7130

- MODARF tool in the IACHEC WIKI page:
  https://wikis.mit.edu/confluence/display/iachec/Data3

- Modifies the input arf, assuming the user-defined reference instrument arf is accurately calibrated

- Only the shape (i.e. energy dependence) of the effective area is correctly modified. The normalisation of the effective area is forced to remain unchanged at 1.1 keV during the arf modification. Thus, the tool is valid for studying the cross-calibration uncertainty effect on the temperatures, but not on fluxes.

- Scaling factors were computed with Chandra CALDB 4.5.5.1 and XMM-Newton calibration files from 14.12.2012 .

- Requirements: python(2.x), astropy (pyfits), numpy

- Usage: python modarf.py [input-arf] [outfile] [mode]

mode	input_instr	reference_instr
1	ACIS	PN
2	ACIS	MOS1
3	ACIS	MOS2
4	PN	ACIS
5	PN	MOS1
6	PN	MOS2
7	MOS1	ACIS
8	MOS1	PN
9	MOS1	MOS2
10	MOS2	ACIS
11	MOS2	PN
12	MOS2	MOS1