

Cross-WG cross- calibration WG?

IUCAA Nevalainen

11th IACHEC meeting, 2016, IUCAA

What?

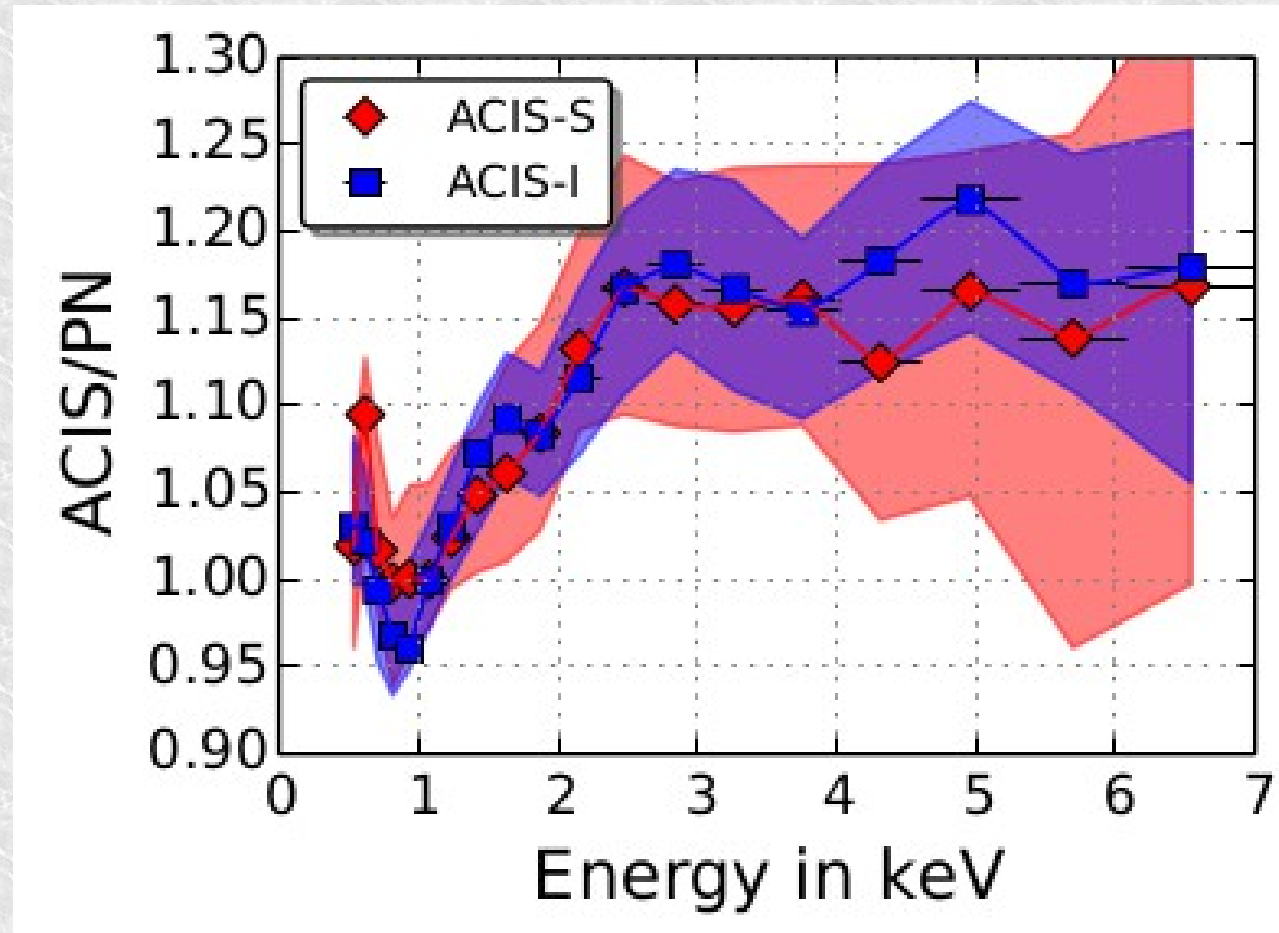
- ★ A forum for dedicated discussion between the different working groups
- ★ Utilise the collective experience of IACHEC to go beyond the WG tasks
- ★ Attempt to understand the instruments as a whole
- ★ Verify that WGs are consistent
- ★ Ask and answer questions like:
 - How do the analyses of different types of objects look when put together?
 - Are the residuals btw two given instruments similar, independent of the object type? Should they be similar?
- ★ Experts on the calibration of different instruments could try to understand the cross-cal patterns. Find and test different sources of calibration problems. (Complementary to Concordance Calibration, PyBLocks)

1) Practise

1.1) Residual patterns

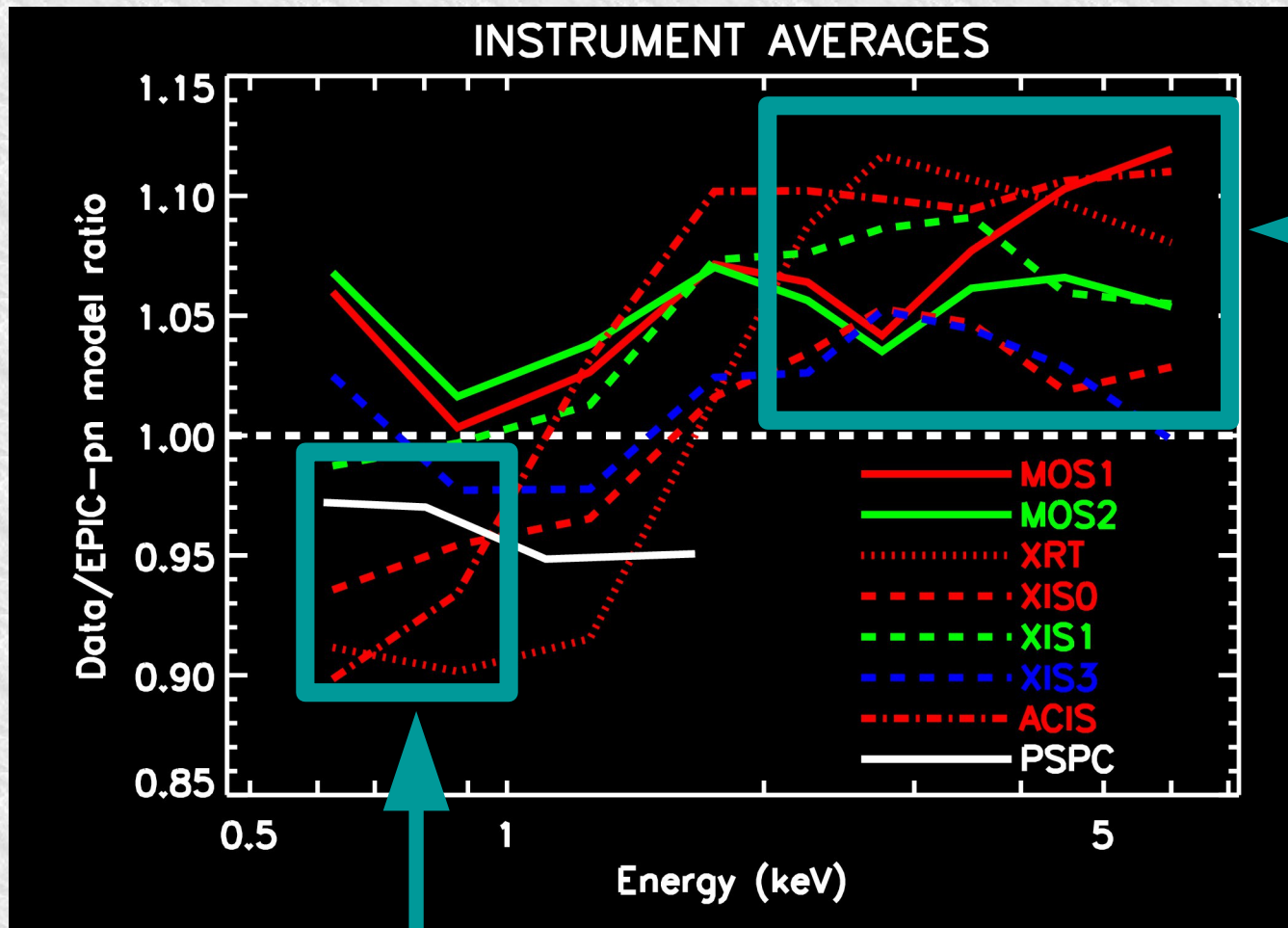
Residual patterns

- ★ Nevalainen et al. (2010) and Schellenberger et al (2015) consistently report serious problems with XMM-Newton / Chandra-EPIC effective area shape cross-calibration



Residuals ratios

The average instr/pn residual ratio of each pair



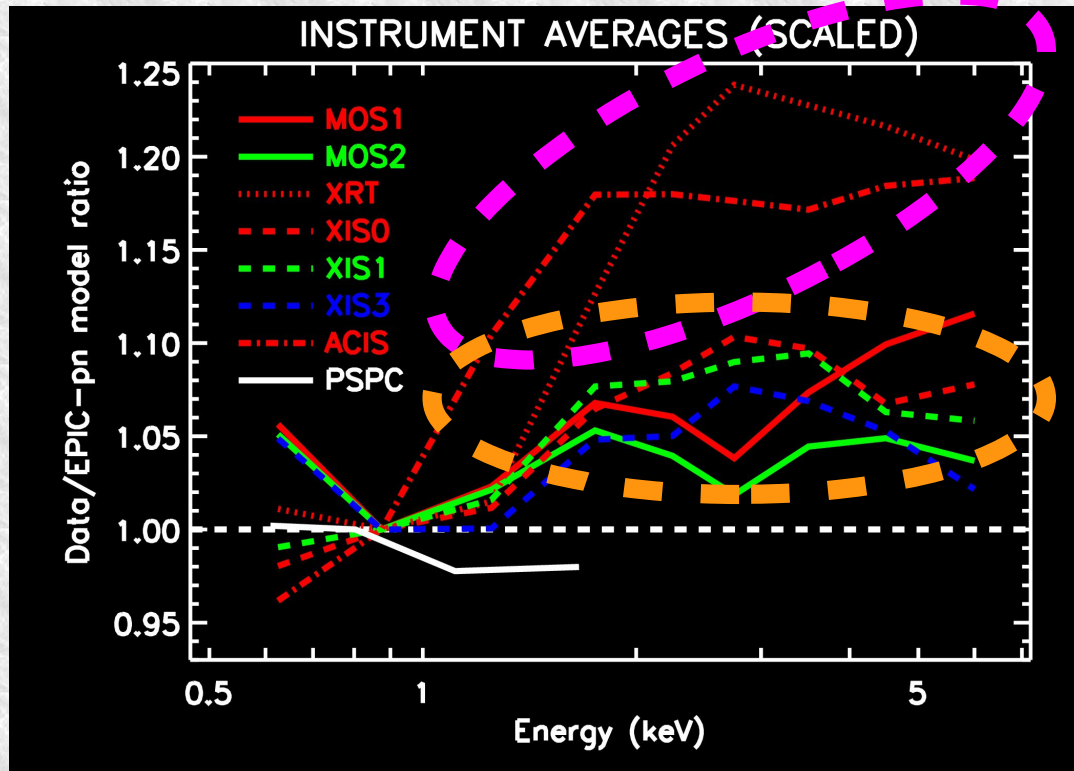
All instruments show higher flux than pn at > 2 keV, but with a varying degree (0-15%)

Request 1 to IACHEC community:
Are the evidence convincing enough to make conclusions about EPIC-pn calibration?

Most instruments show lower flux than pn at < 1 keV, but with a varying degree (0-10%)

Scaled residuals ratios

Request 2 to IACHEC community: explain why there are the two groups



A) Chandra/ACIS & Swift/XRT

B) EPIC/MOS & Suzaku/XIS

I.e. is (are) there some element(s) of the effective area instrumentation or calibration that is (are) common within a given group, but different btw. the two groups?

The average instr/pn residual ratio of each pair, scaled to unity at 0.75-1.0 keV

Residual patterns

- ★ We have the expertise to address this problem. How do we proceed?
- ★ Remember the Chandra calibration update 2010
- ★ Agreed to have WG chair telecon later in 2016 to discuss the cross-cal results from different WGs, and decide then how to proceed