TASKS BY TOPICS AND PAPERS

PAPER 1: Effect of XMM/Chandra cross-calibration to cosmology I

1) BLANK SKY V.S. CLUSTER NH

1.1) Find cluster with high NH and low flux

1.2) Compare with Jukka's PKS stuff (DONE)

2) STACK RESIDUALS

2.1) Use the same regions and clusters as for the cosmology

2.2) Do ACIS-I/pn, ACIS-S/pn, MOS1/pn, MOS2/pn

3) TREAT ACIS-S AND ACIS-I AS DIFFERENT INSTRUMENTS

3.1) Separate ACIS-S/pn and ACIS-I/pn

3.1.1) Show the difference in energy dependence of the cross cal

3.1.2) Show that the above effect is in narrow band and does not affect significantly the wide band temperatures

4) CONTINUUM TEMPERATURES (wide band only)

4.1) How to calculate significance? (see N10 5.2)

(T_2 - T_1) / sqrt(sigma_2_+^2 + sigma_1_-^2)

5) CONSISTENCE WITH N10

5.1) Relevant datapoints or fits from N10 (Jukka)

6) SHOW THE THEORETICAL FLATTENING EFFECT ON THE MASS FUNCTION IF THE T-DEPENDENT CROSS-CAL BIAS WAS MUCH STRONGER

PAPER 2 : Effective area XMM/Chandra cross-calibration accuracy characterisation using HIFLUGCS sample

1) SAMPLE CRITERIA

1.1 All XMM and Chandra clusters with number of counts above X in the 0.7-7.0 keV band?

2) STACK RESIDUALS

2.1) Show that physical accuracy of the model does not matter (if not evident from the definition) (JUKKA)

2.2) Use also the cool cores and larger radii (keeping bkg below 5?% of cluster signal)

2.3) Use central and outer region separately to examine off-axis calibration

3) TREAT ACIS-S AND ACIS-I AS DIFFERENT INSTRUMENTS

3.1) Better done with the same cluster observed with both ACIS-I and ACIS-S. Are there enough clusters observed with both to detect systematic trends? At least Coma and A1795.

3.2) Time dependence

4) CONTINUUM TEMPERATURES

4.1) T difference increases with higher T. Why?

4.1.1) Try simulations with cross-cal uncertainties + multi-T (Lorenzo)

5) FLUXES

5.1) ACIS flux scaling procedure (dithering, CCD gaps)

5.2) EPIC choice of excluding CCD gaps and bad pixel (PN flag==00, #XMMEP) (resulting fluxes, scaled with the corresponding BACKSCAL, differ systematically by 4%)

6) LINE RATIO TEMPERATURES

6.1) define sample criteria

6.1.1) T>7? keV

6.1.2) counts > 1000 in the 0.8 keV wide band to avoid bias (need to be redone with Gerrit'snew line ratio method) (Jukka)

6.1.3) count limit as a function of T for 3 sigma detection? Simulate (Jukka)

6.2) Extension of line ratio sample

6.3) Simulation for multitemperature effect on Fe XXV/XXVI ratio (Jukka)

6.3.1) Use as large region as possible without significant multi-T bias (and without bkg effects)

6.4) Position on the detector (ACIS-I) determines the energy resolution

6.4.1 Quantify effect on line ratio temperatures

6.5) If Fe XXV/XXVI T agrees with hard band continuum temperature, make case for accurate calibration in hard band

6.6) Include more lines for temperature constraints (Sulfur)

7) CONSISTENCE/COMPARISON BETWEEN PAPER 2 AND N10 (Jukka)

7.1) Relevant datapoints or fits from N10

7.1.1) Temperatures (different bands, instruments and methods)

7.1.2) Fluxes

8) USE FREE NH V.S. GALACTIC NH COMPARISON TO JUDGE IF ANY INSTRUMENT HAS ACCURATE CALIBRATION (IF HARD BAND AND FE XXV/XXVI TEMPERATURES AGREE)

8.1) Use all good Fe XXV/XXVI clusters and all of good region (see above)

8.2) Fit a given cluster simultaneously with all instruments

8.3) Free NH (independent for different instruments)

8.4) Fit wide band with phabs*apec

8.4.1) Only if the hard band and Fe XXV/XXVI temperatures for all clusters and all instruments agree well enough, i.e. we can assume the calibration to be accurate in this band

8.4.2) Assuming isothermal emission (problem...)

8.4.3) T constrained to agreed Fe XXV/XXVI value (From a joint fit value to all instruments)

9) MAYBE

9.1) Systematic difference between ACIS back and front illuminated chips?

PAPER 3: Effect of XMM/Chandra cross-calibration to cosmology II

1) SHOW THE EFFECT OF USING ONLY 0.5-2.0 KEV BAND FOR HIGH REDSHIFT CLUSTERS, AS ARNAUD IN CASE OF PLANCK CLUSTERS.