

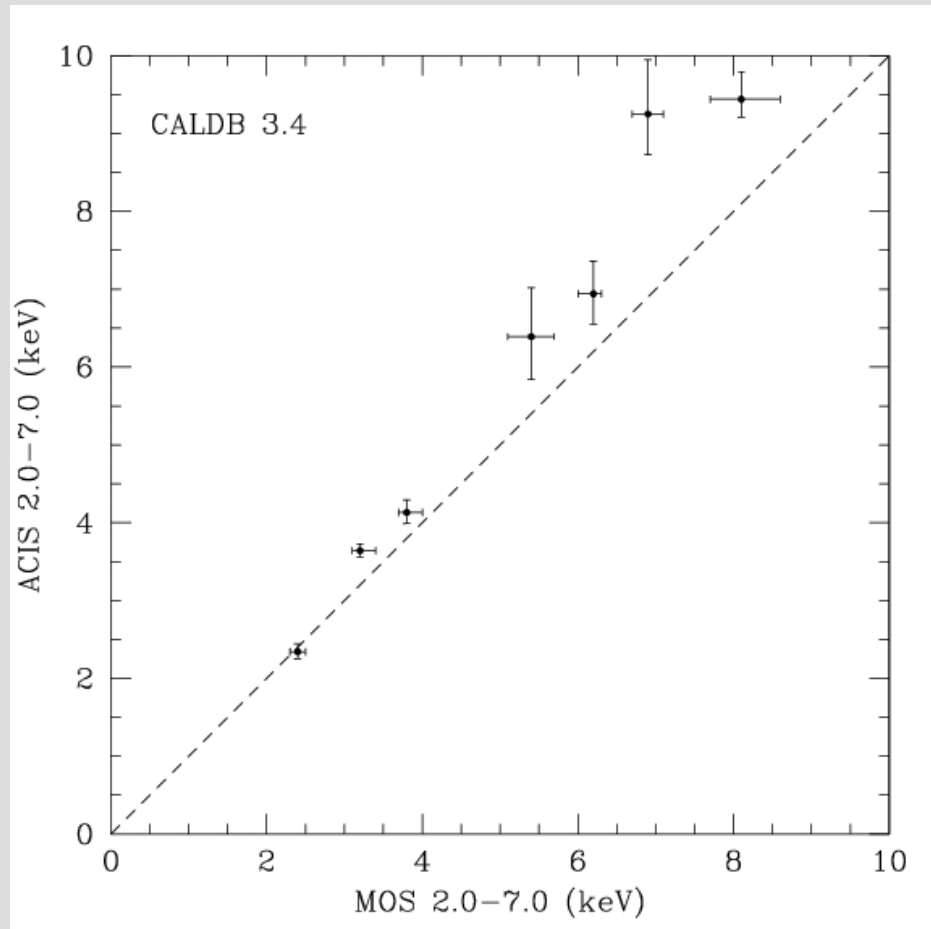
XMM-Newton/ Chandra Cross Calibration with Clusters of Galaxies

L. David & J. Nevalainen

CXC Calibration Review
September 21 2009

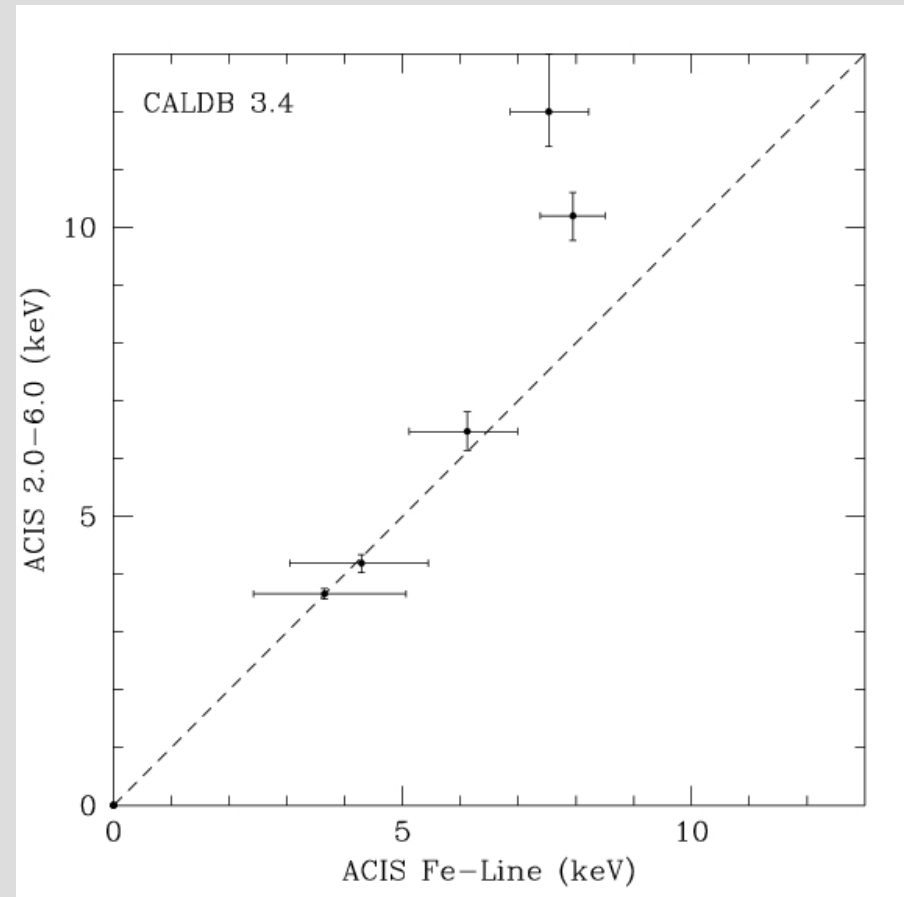
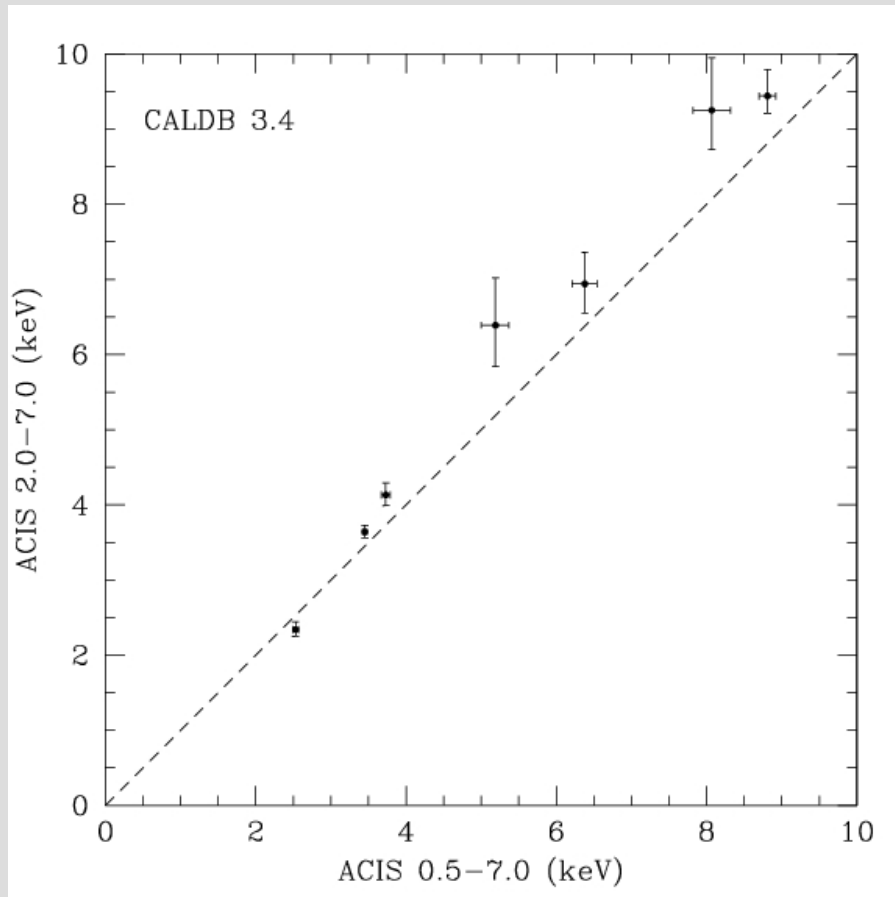
Plot from 2 annual IACHEC Meeting

Comparison of XMM-Newton and Chandra derived Cluster Temperatures

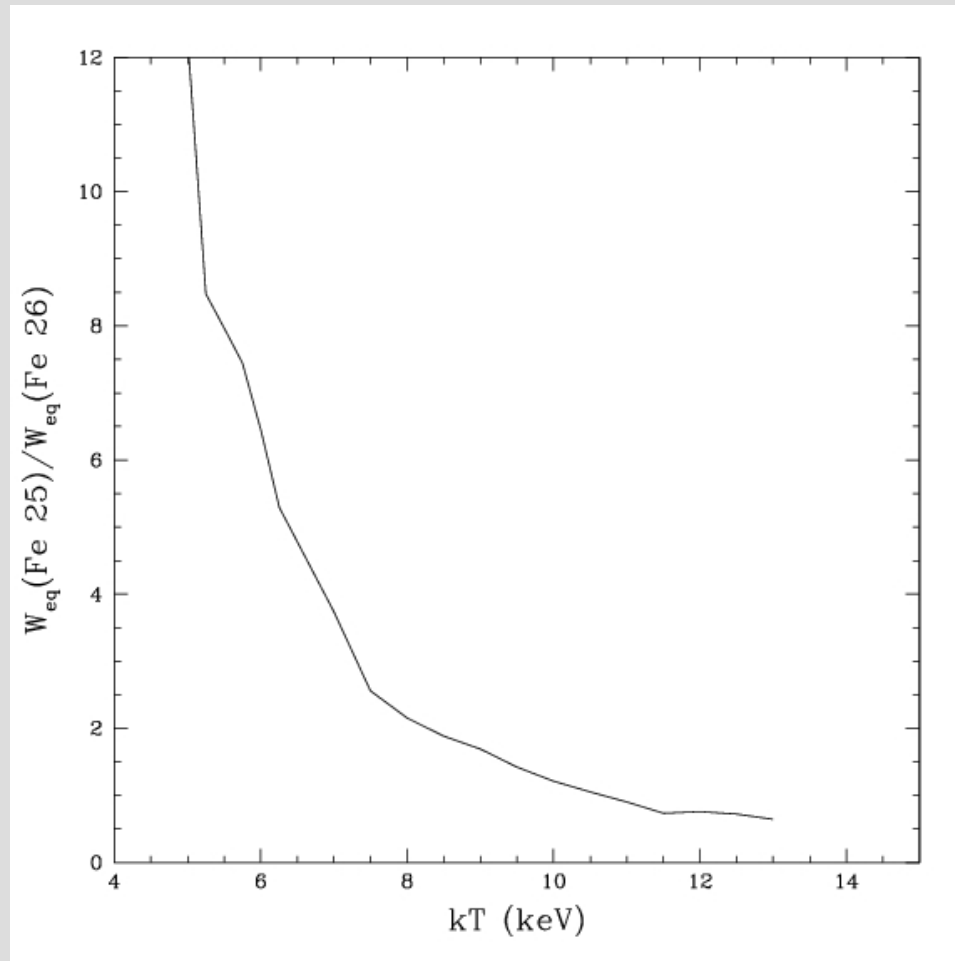


Default HRMA
effective area prior
to Jan. 21, 2009

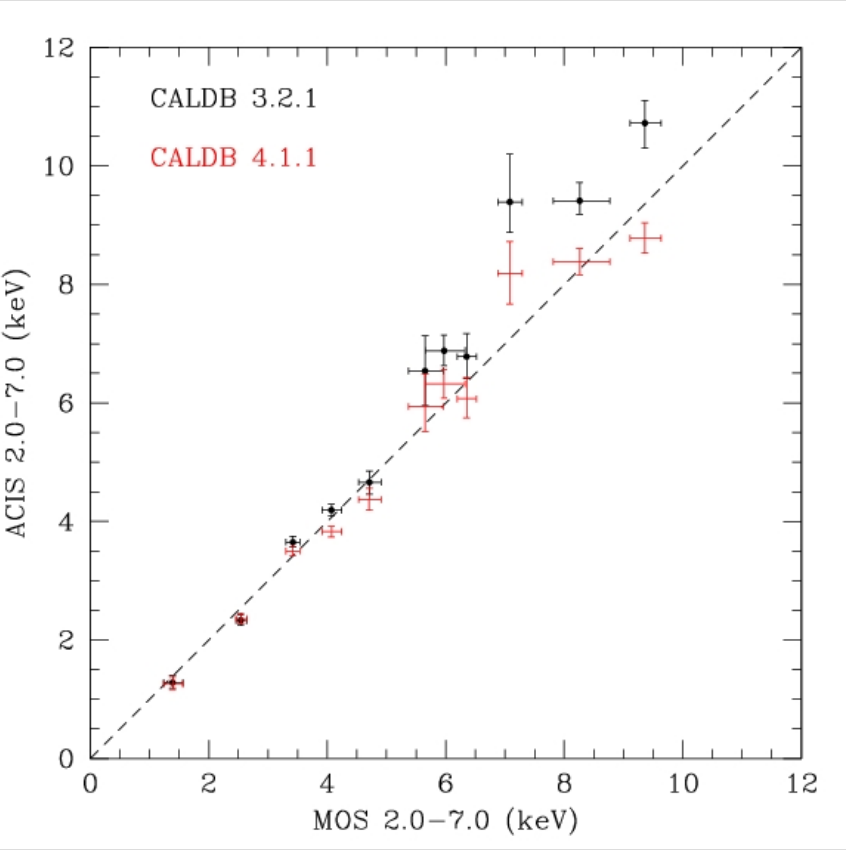
Internal comparison of ACIS derived temperatures



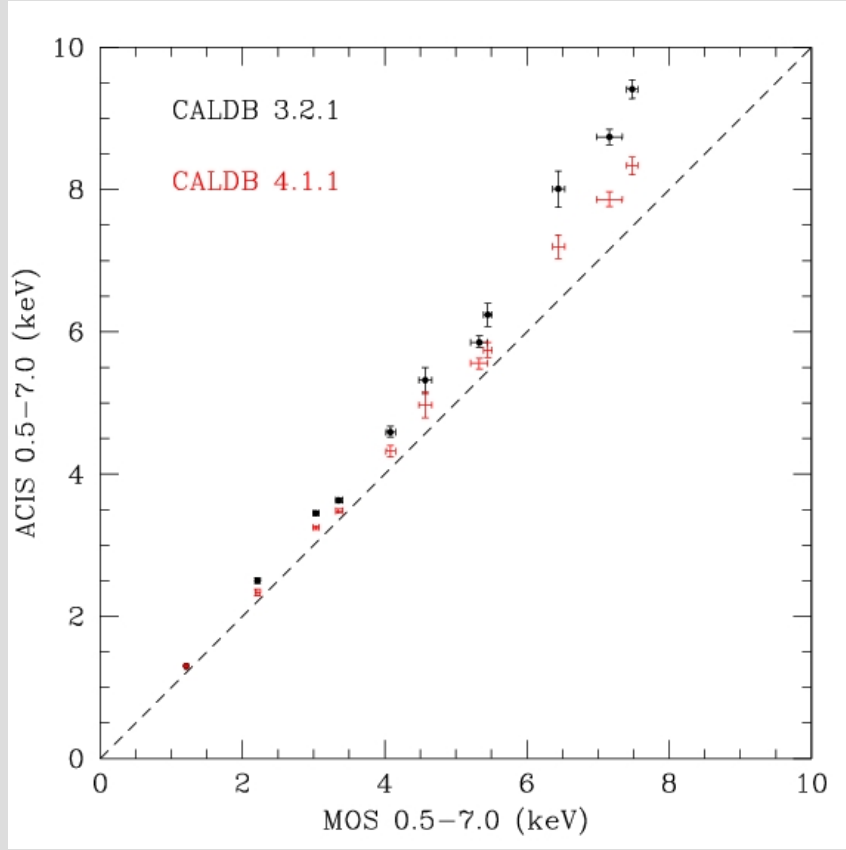
Cluster Temperature vs. Fe-line Ratio



Comparison between ACIS and MOS derived temperatures in the 2-7 keV band.



Comparison between ACIS and MOS derived temperatures in the 0.5-7 keV band



Chandra/XMM-Newton Cluster Cross-Calibration using SASS v8.1 and CALDB 4.1.1

<u>Cluster</u>	<u>kT(keV)</u>
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N5044	1.3
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A262	2.3
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A2052	3.2
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Hydra A	3.5
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MKW3S	3.9
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A2199	4.3
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A3112	5.0
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A85	5.6
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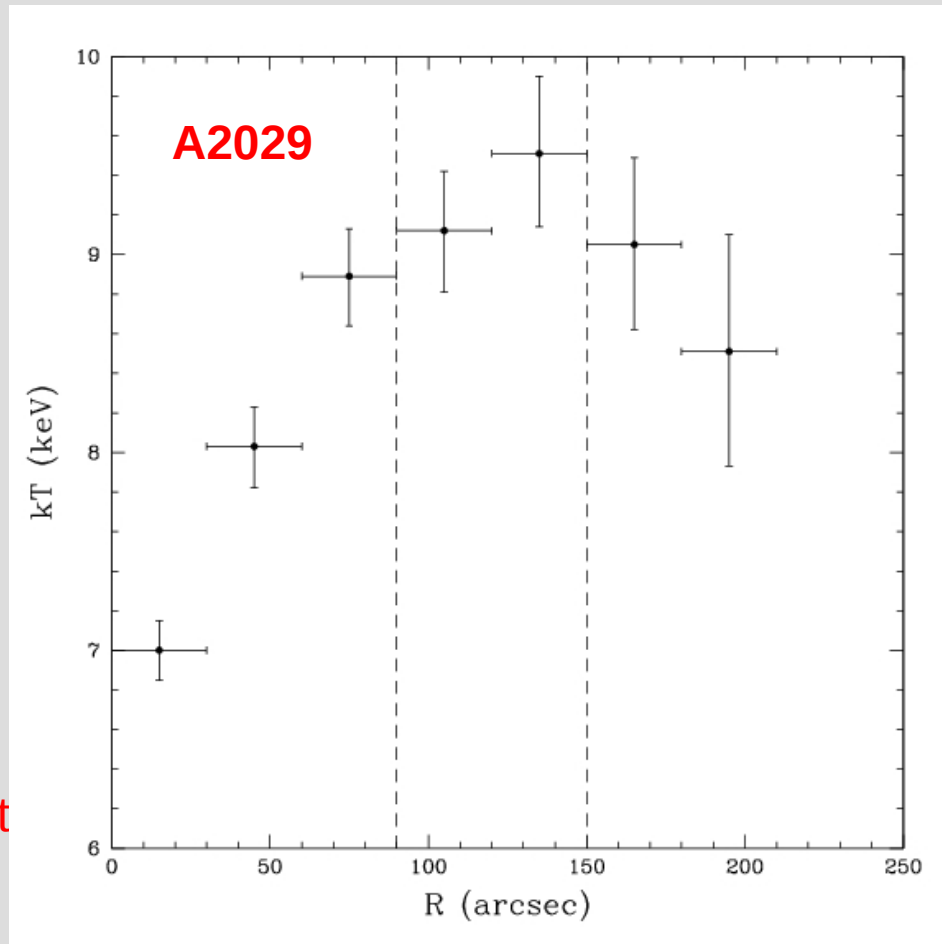
A1795	5.7
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A3571	7.2
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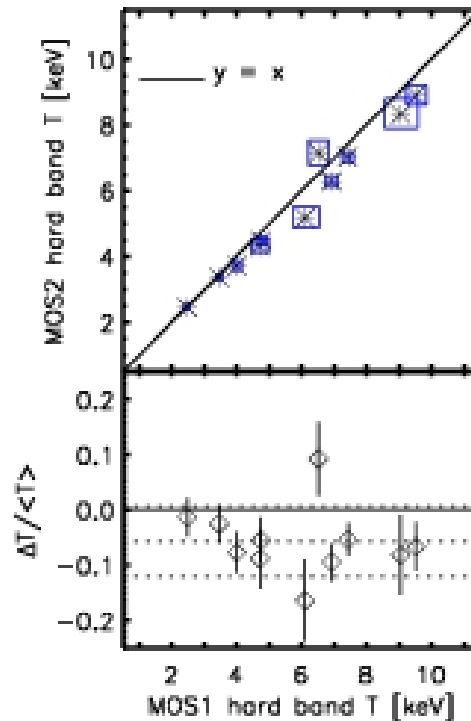
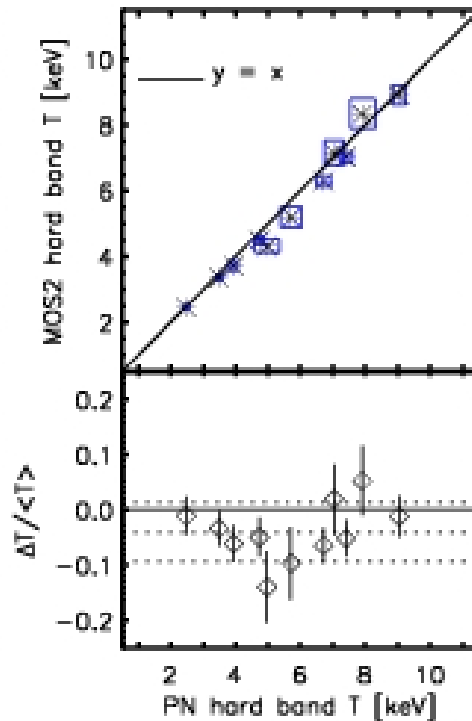
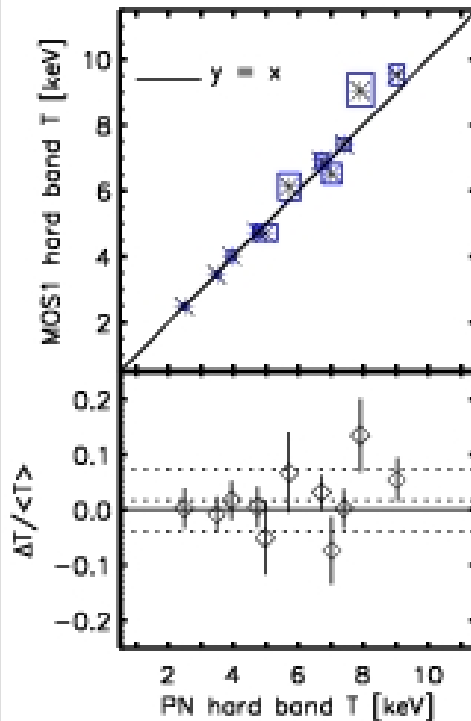
A2029	7.9
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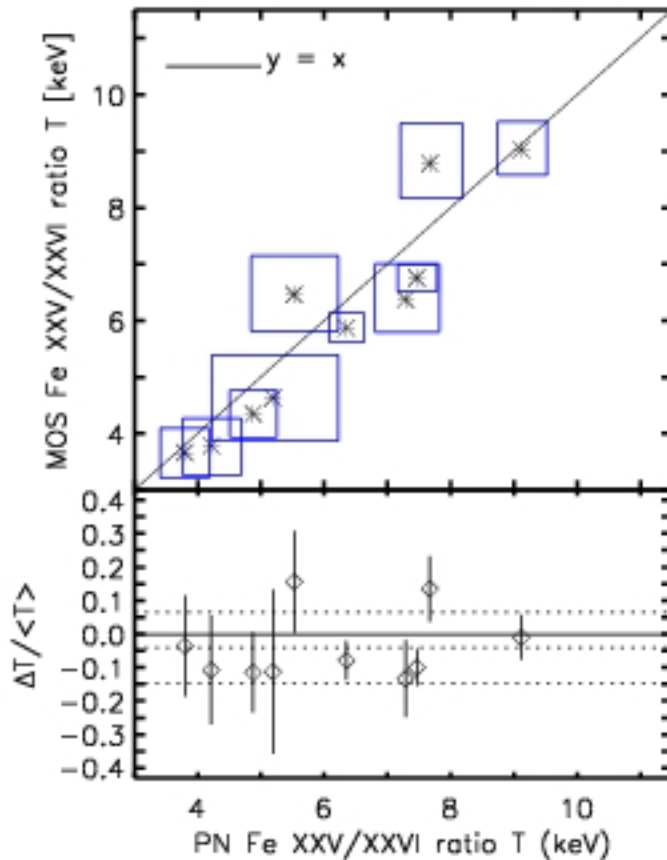
Coma	8.3
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XMM-Newton

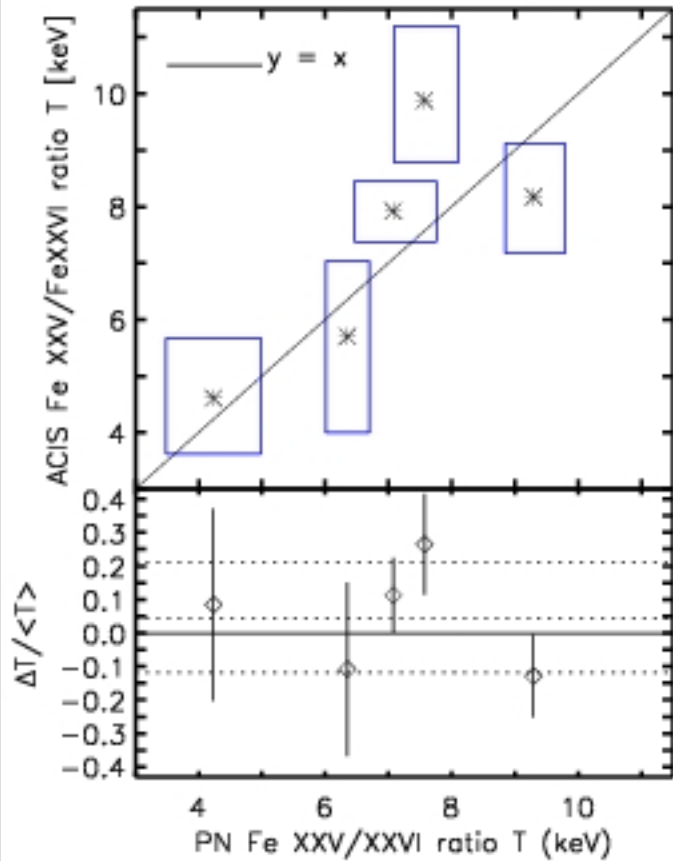


XMM-Newton Internal Cross-Calibration



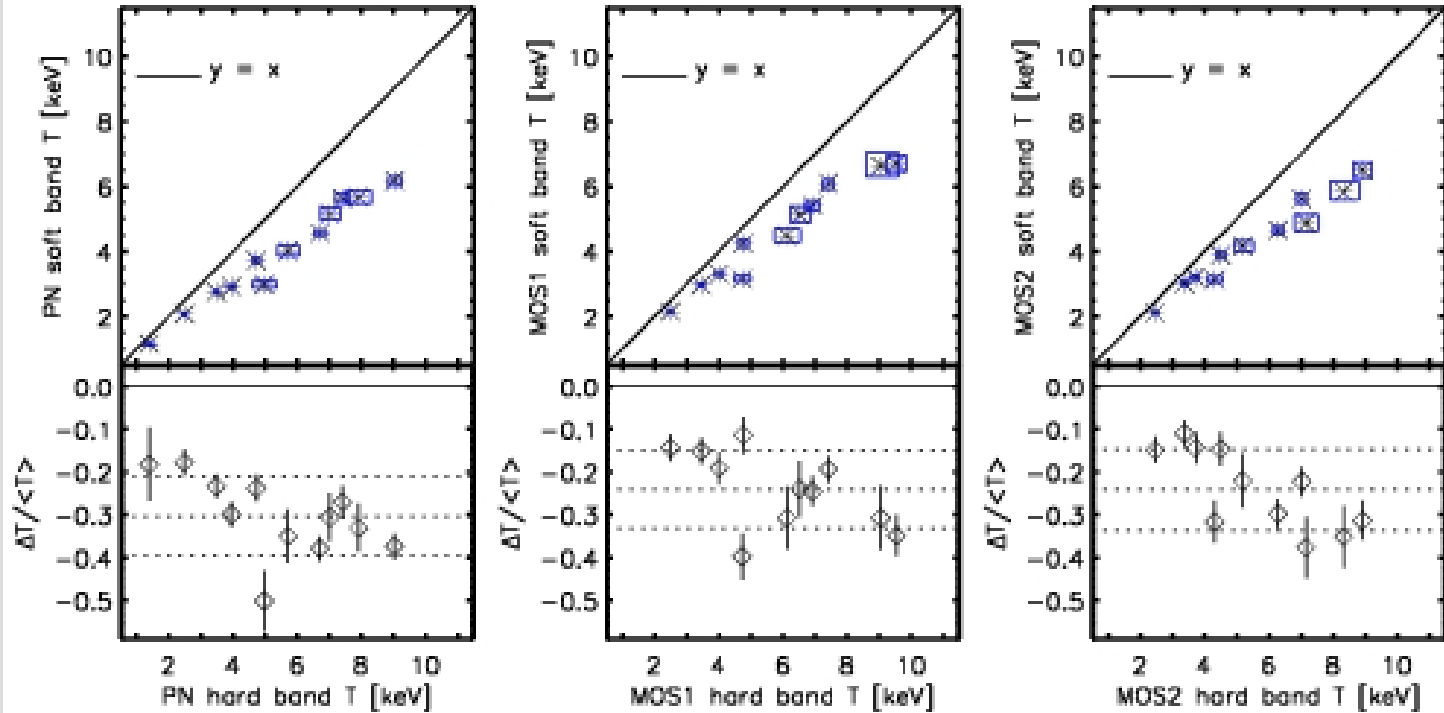


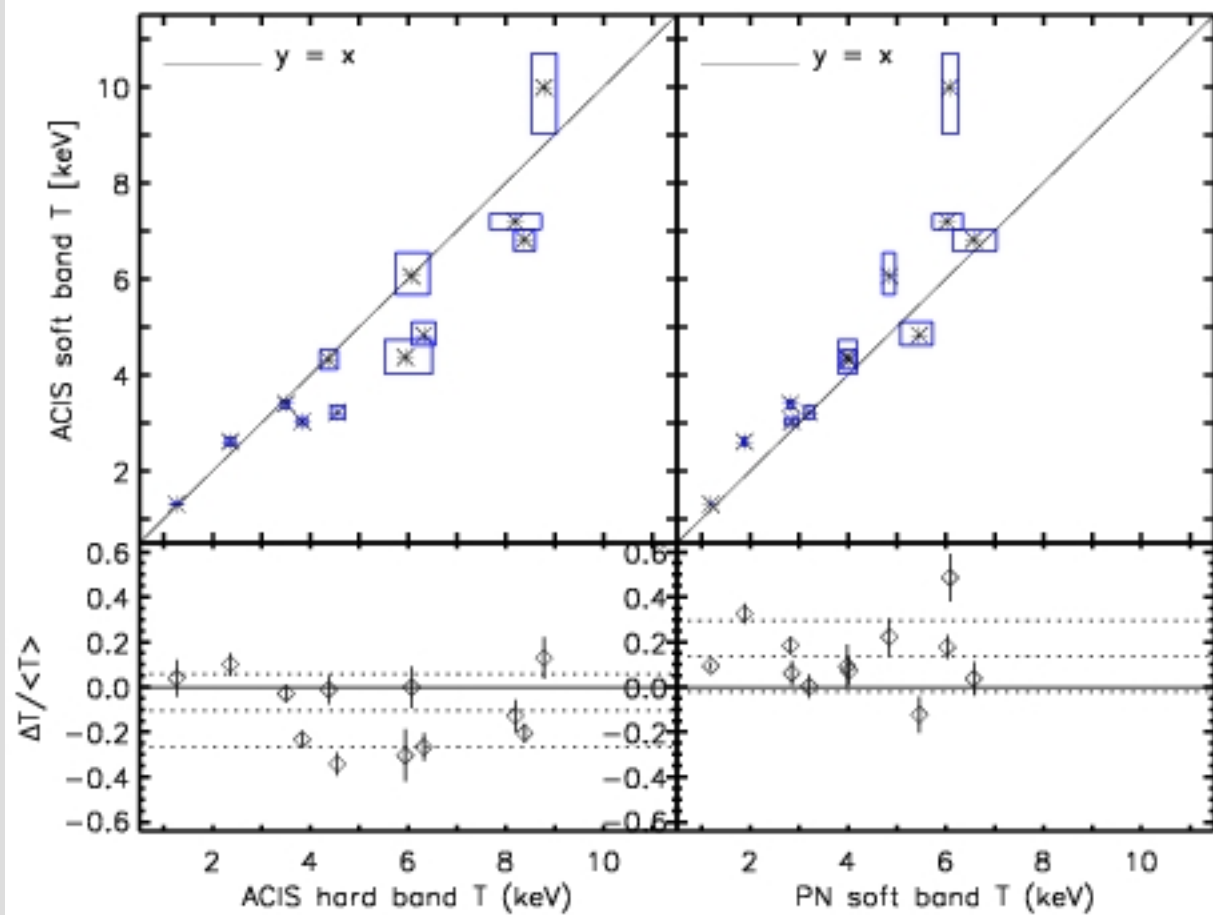
Comparison between MOS and PN derived temperatures from the Fe-line ratio.



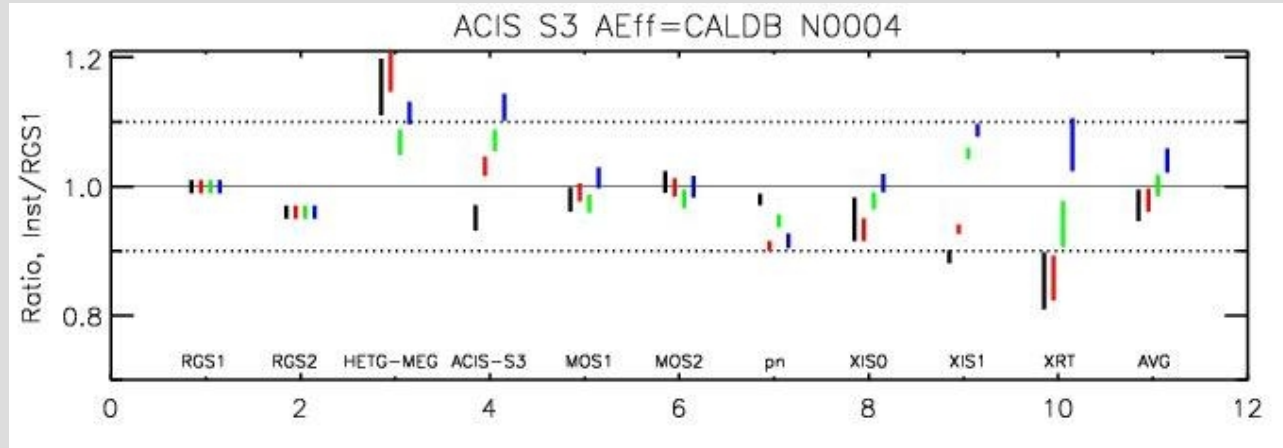
Comparison between ACIS and PN derived temperatures from the Fe-line ratio.

XMM-Newton Internal Comparison (Soft vs. Hard Band Temperatures)



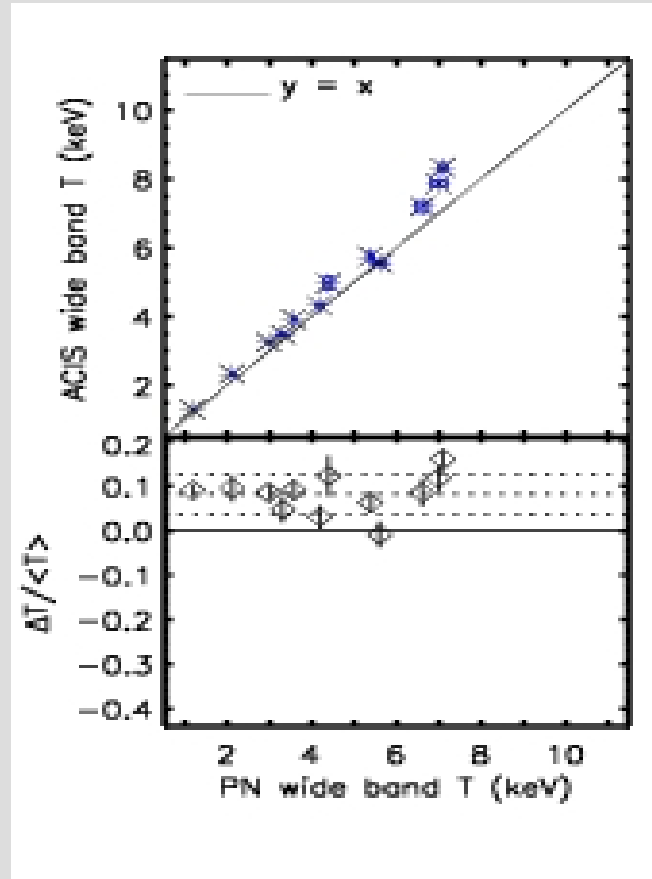


E0102 Cross-Calibration



Similar trend as derived from Cluster temperatures in the 0.5-2.0 keV energy band

Chandra/XMM broad energy band comparison



Summary

Hard energy band (2.0-7.0 keV)

MOS1 temperatures are approximately 5% greater than MOS2 temperatures

MOS1 and PN temperatures are essentially consistent

ACIS, MOS1 and PN temperatures are essentially consistent

Soft (0.5-2.0 keV) vs. Hard energy bands

ACIS - soft band temperatures are 10% less than hard band temperatures

MOS1 and MOS2 - soft band temperatures are 20% less than hard band temperatures

PN - soft band temperatures are 30% less than hard band temperatures

Broad energy band

ACIS temperatures are 5% greater than MOS temperatures

MOS temperatures are 5% greater than PN temperatures