

White Dwarf & isolated Neutron Star Working Group Summary



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International Astronomical Consortium
for High Energy Calibration IACHEC
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Absolute Calibration at Soft X-rays

- Spectra of WDs and iNS needed
- what models should be used?
 - Descriptive vs. physical
- uncertainties?
 - good spectra needed

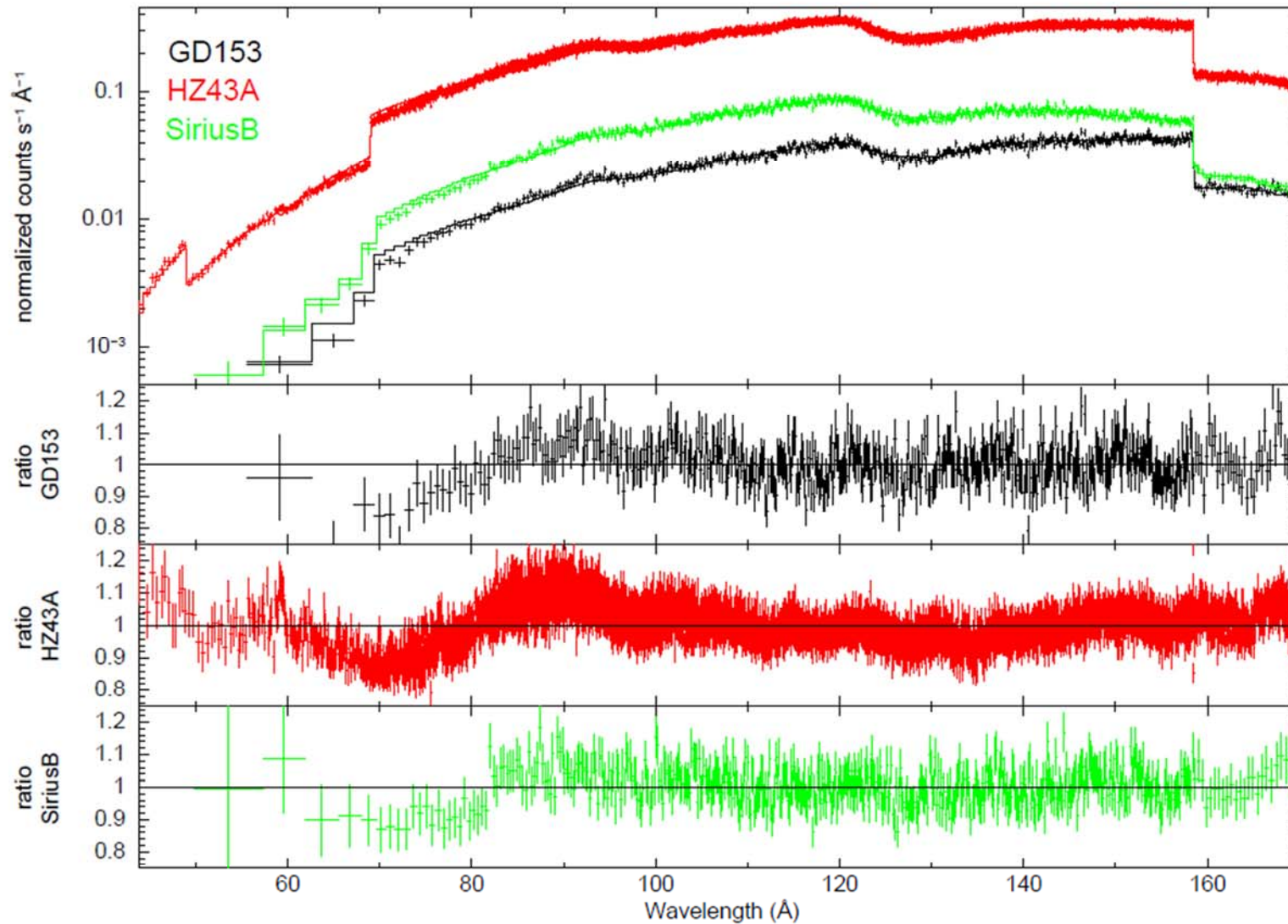
Publication Activities

Beuermann et al. 2006, A&A 458, 541
Beuermann et al. 2008, A&A 481,769
Rauch et al. 2008, A&A 481,807
Kaastra et al. 2009, A&A 497,311
Menz 2011 Diploma Thesis (GD 153)
Menz et al in preparation

Detailed talk on iNSs was given at the last IACHEC #5 by
→ *Valery Suleimanov*

Detailed talk on WDs was given at the last IACHEC #6 by
→ *Thomas Rauch*

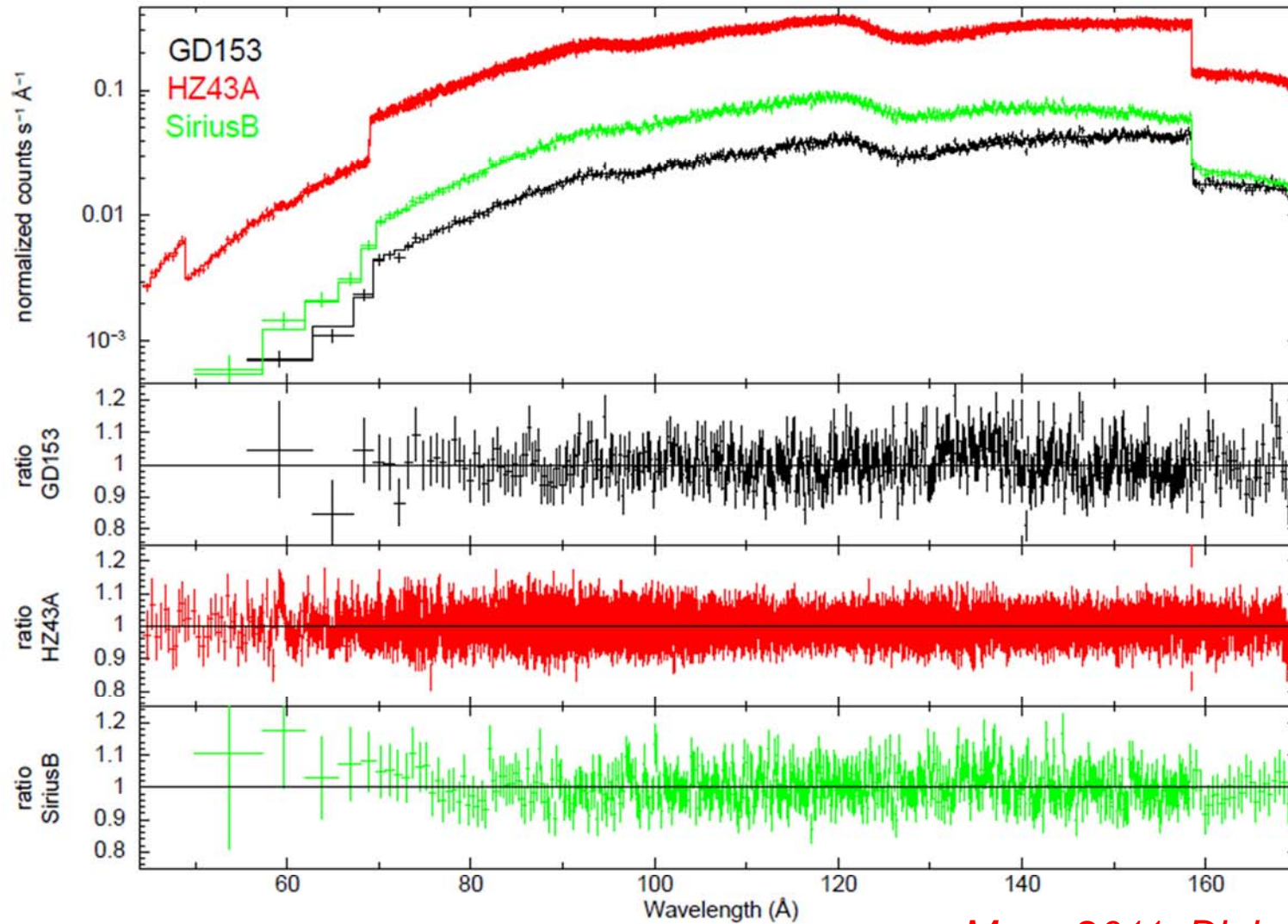
HZ43, Sirius B and GD153



Menz 2011, Diploma Thesis

Figure 5.1.: Model fits to the calibration sources with the *Chandra* effective area. In the upper panel the folded models and data are plotted. The ratios from data to model are plotted for each calibration source in the lower panels.

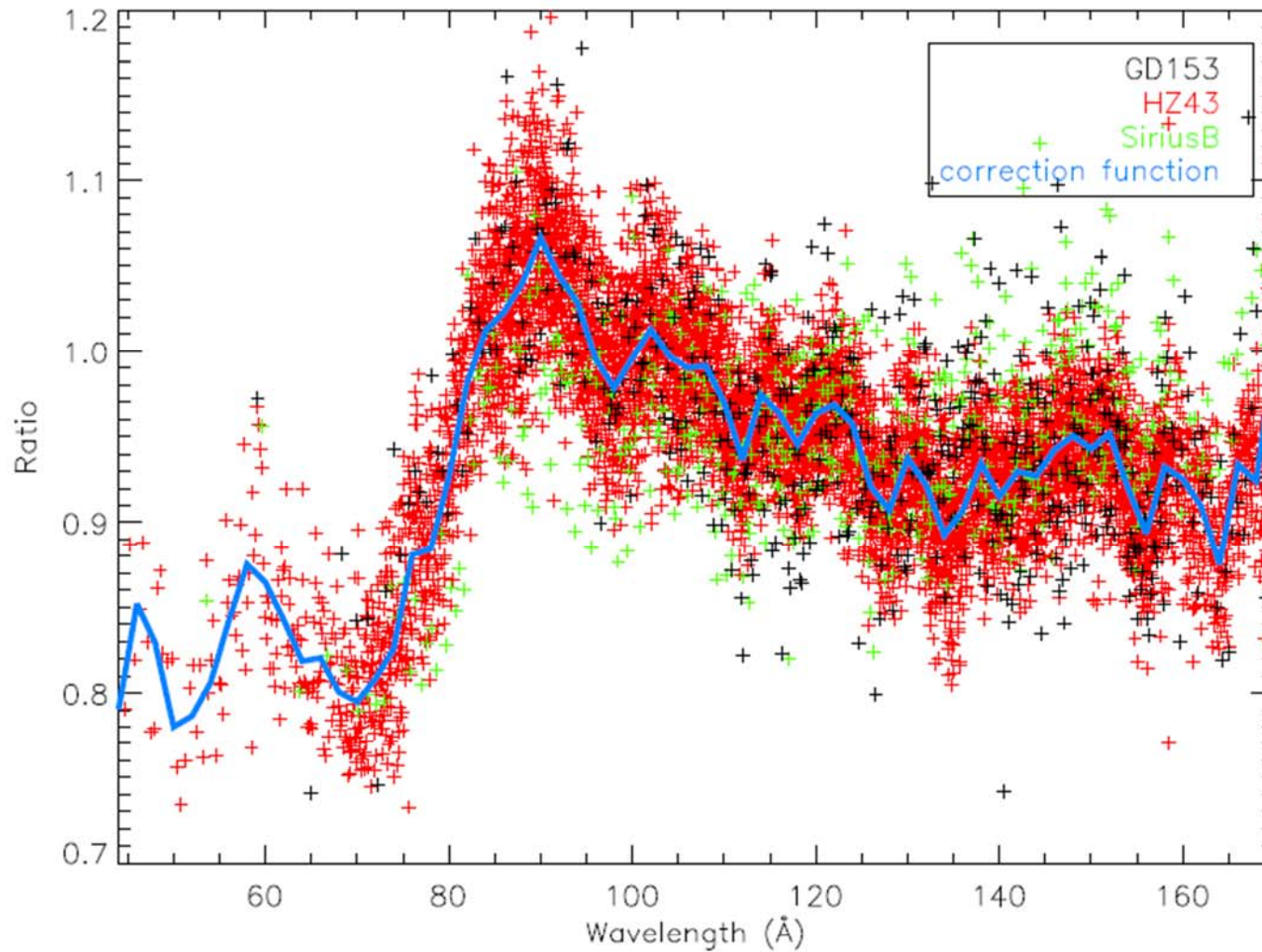
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Figure 5.2.: Fits to the calibration sources with the corrected effective area. Fits and ratios are plotted in the same way as in Fig. 5.1

Correction function for the LETGS



Menz 2011, Diploma Thesis

Figure 5.3.: The calculated correction function. Overplotted are the ratios from data to the uncorrected models with the same parameters as used for the correction function.

Simultaneous fit to RXJ1856 and the WDs

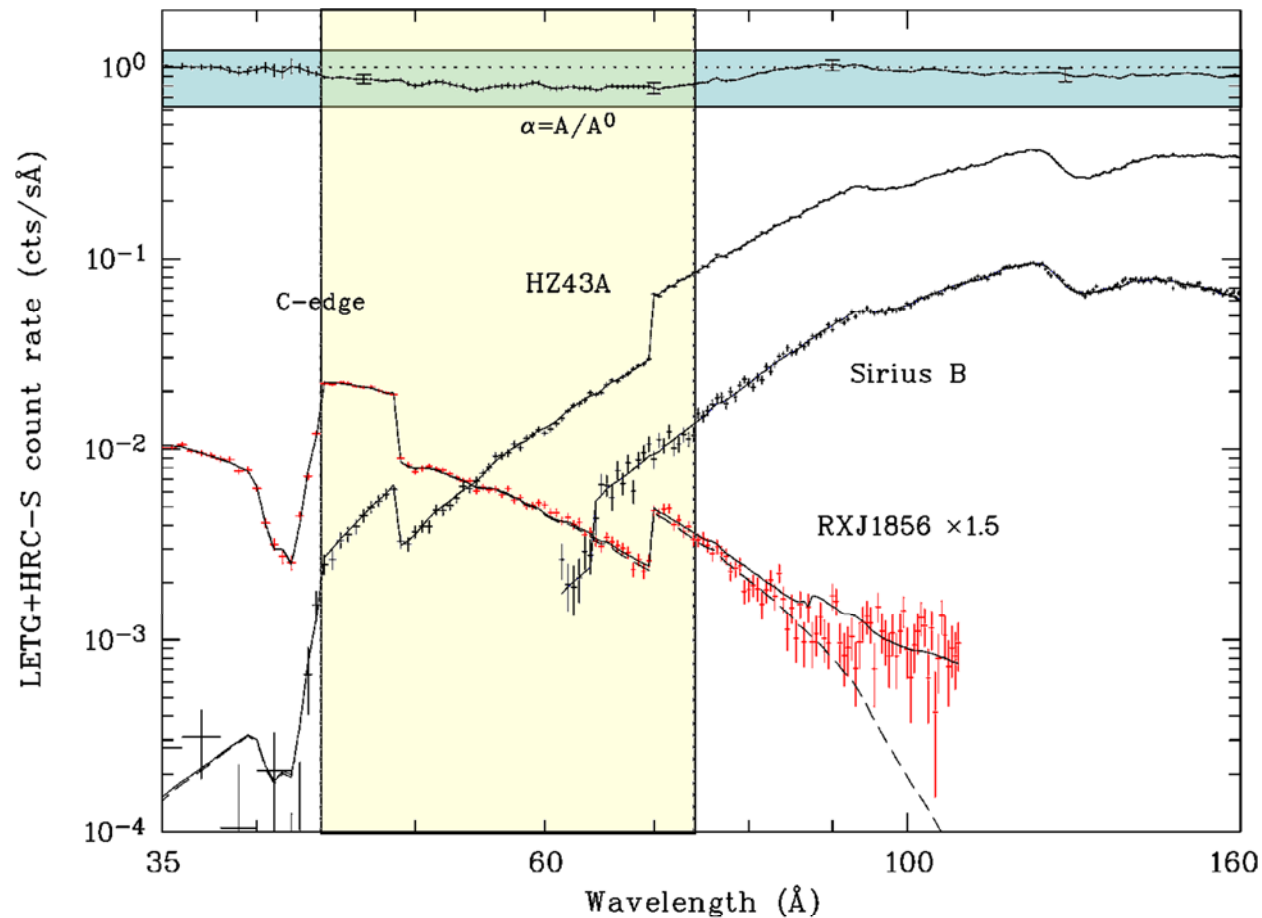


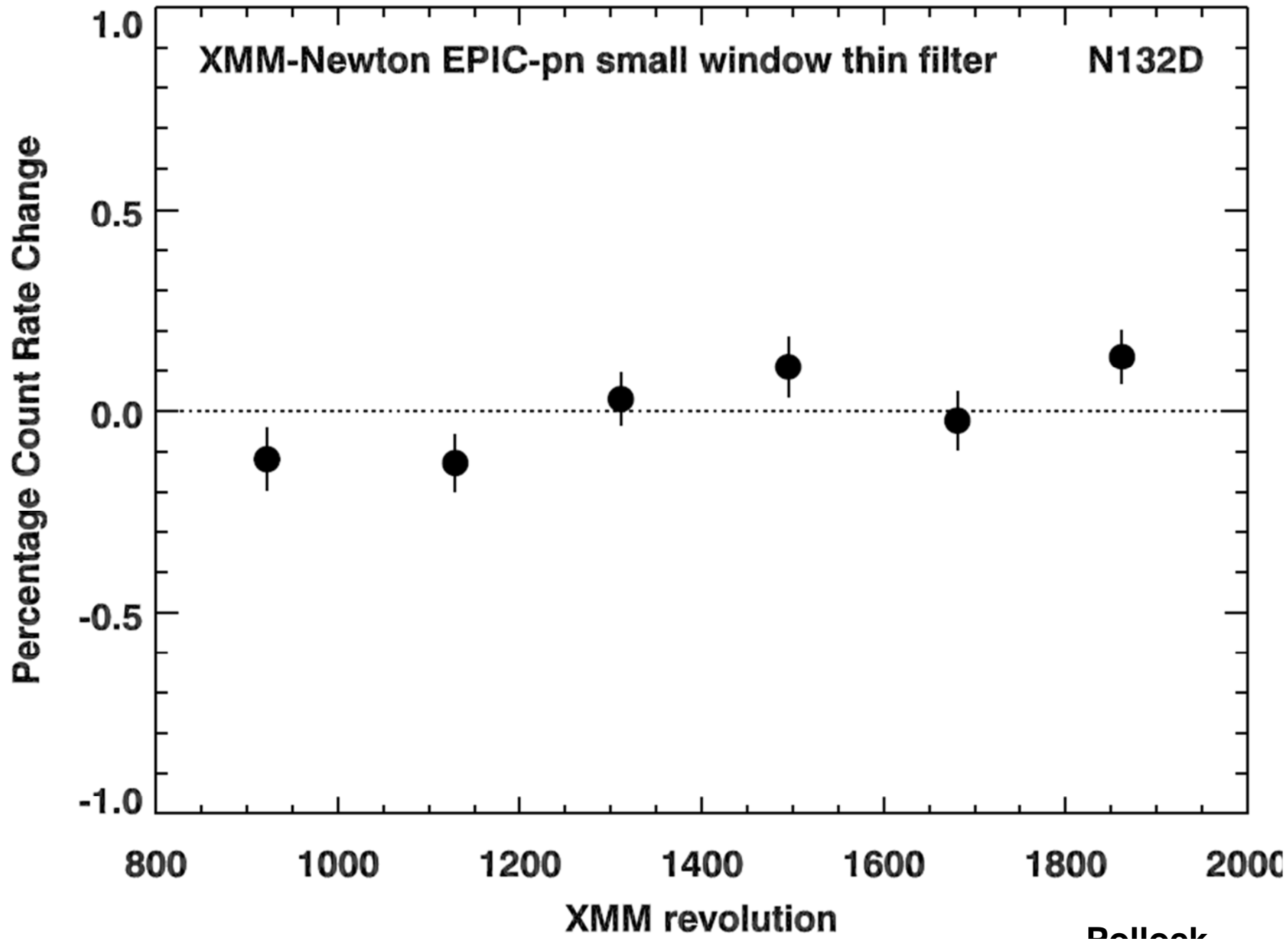
Fig. 5. Simultaneous fit of RXJ1856, HZ43 A, and Sirius B in the wavelength ranges marked by vertical dotted lines (see Sect. 4.4.2). The LETG spectra binned to 0.5\AA are shown as data points, the corresponding best-fit models as solid curves, and the first-order contributions as dashed curves. The area correction function α is shown at the top. It converts the nominal LETG+HRC-S first-order effective area A^0 of the November 2004 release into the adjusted area A used in this paper. Systematic uncertainties in α are indicated by error bars at 46, 70, 90, and 125\AA . The steps in the count rate spectra of HZ43 A and RX J1856 at 49 and 69\AA result from the detector gaps. Sirius B was observed off axis and its gaps are located differently (see text).

Beuermann et al. 2006, 2008

Summary of the Discussion I

- Pollock →
 - EPIC-pn stable to +/- 0.1 % (6 N132D pn SW obs.)
next observation planned
 - RXJ1856 stable to +/-1.2% (variability, -3% to +5%
pn SW obs.), used for MOS calibration + RGS
contamination monitoring
 - Some correlation between EPIC-pn and RGS
normalizations
- Marshall →
 - Stable enough for monitoring ACIS-S
contamination build up of Carbon Oxygen Fluorine
 - Yearly 30ks LETG + ACIS-S observations (since 2
years)

Note: the scale covers $\pm 1\%$



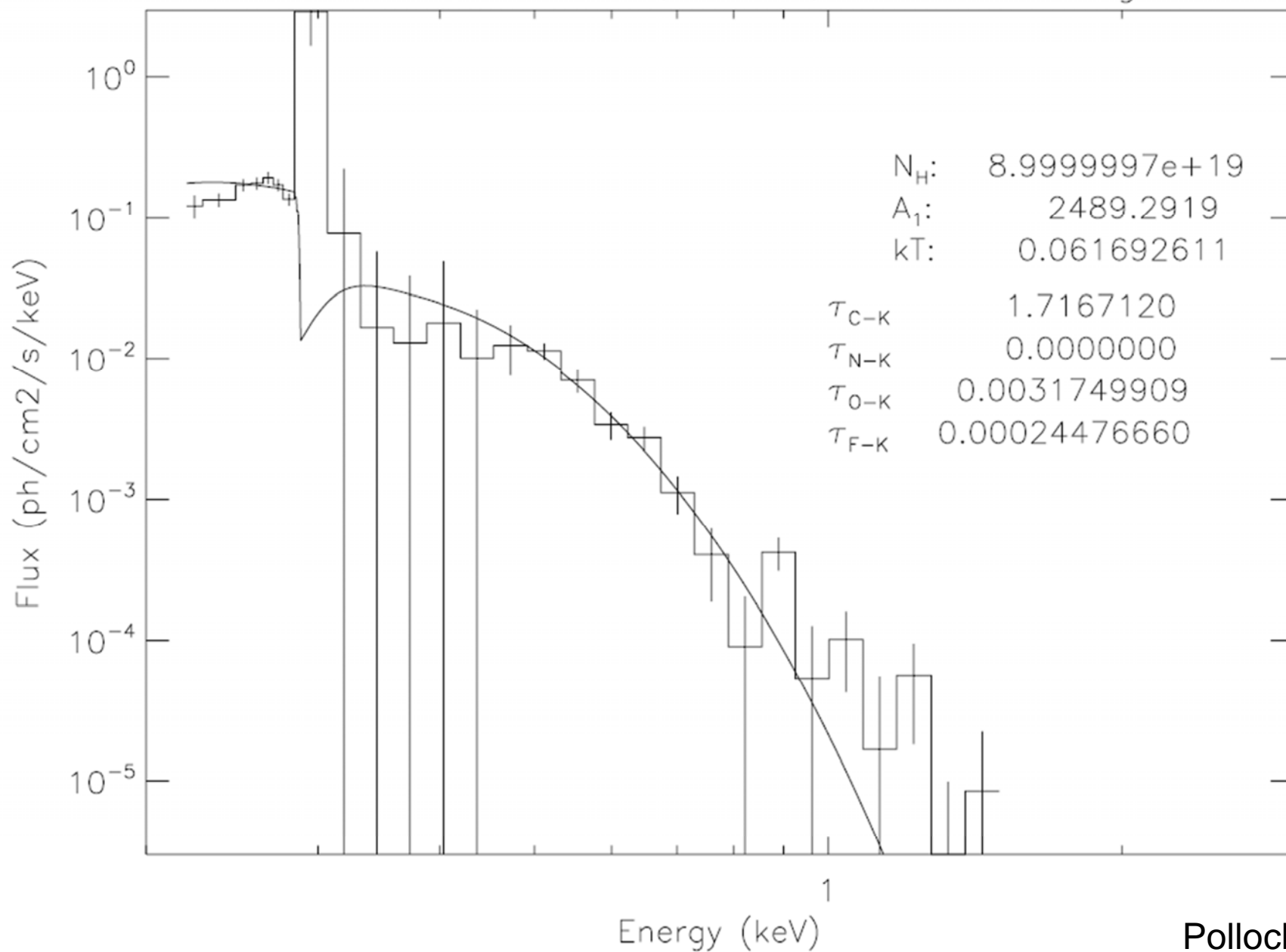
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RX J1856, Jul 2012, LETGS, with CNOF edges



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Summary of the Discussion II

- New RXJ1856 observations →
Joint SRON (Kaastra) /MPE (Predehl) /CXC (Murray) /CXC (Drake)
 - 90ksec July 2013 LETG HRC-S → VB
 - 30ksec Sept 2013 LETG HRC-S → JD
 - 30ksec Sept 2013 LETG ACIS-S → HM
 - Analysis →
 - Compare new spectrum with 500ks observation
 - Check with JD observation setup which voltage?.
 - Add Burwitz Model to IACHEC webpage
- New set of secondary iNS standards
 - ~5 non variable objects to support new missions
 - Geminga ? 0437 ?