Effective Area

Cross-Calibration with Parallel Observations
Effective Area
Cross-Calibration with Parallel Observations
EA WG Summary — 2011

• Working on papers
  • Ishida et al.: Suzaku, XMM, Chandra
  • Smith et al.: XMM, Chandra
  • Other working groups: clusters, 1E0102, Crab

• Planning new observations
  • PKS 2155: XMM, Suzaku, Chandra — April 26-27, 2011
    • add Swift
  • other sources, some simultaneous
    • RXJ 1856: Chandra, Suzaku, XMM
    • 1E0102
    • Crab: Suzaku, MAXI
  • NuSTAR in-flight cal with Swift BAT, IBIS: G21.5-0.9?, others?

• Putting it all together
  • Draw a line at some specific stage of calibration, publish
  • Smooth blazar, cluster spectra

• High energy
  • Fermi-LAT and AGILE/GRID cross-cal pilot project now exists using pulsars: Maura Pilia, Ozlem Celik
  • Integral SPI, JEM-X, IBIS; Swift BAT; MAXI GSC; and Suzaku GSO, PIN: working on Crab

• TeV joint observations: HESS, Veritas, MAGIC
PKS 2155 Cross-Cal

Ishida et al. 2011, PASJ, 63, S657.

HLM — Cross calibration

IACHEC — 2012
PKS 2155 Cross-Cal

Ishida et al. 2011, PASJ, 63, S657.
BLLs fit best

RL Quasars

BL Lacs
Combining Residuals

8 BL Lac objects

Curved PL model
Comparison with Tsujimoto et al. G21.5-0.9 XCal

Mean Normalised Flux per Energy Band

Fluxes normalised to PN

Smith+ '11

MOS1 & MOS2

ACIS-S3

HLM — Cross calibration
Cross-Cal: XTE v. HETGS

Count Rate comparison of RXTE vs. Chandra For Burst 22 in keV range 2.5-8.0

- **Persistent Level**
- **XTE Predicted Chandra Rate**
- **Observed Chandra Count Rate**

**Time (s)**
Cross-Cal Summary

• PKS 2155-304 with Suzaku, and XMM (Ishida et al. 2011, PASJ, 63, S657)
  • LETG/ACIS is 10-20% high of both Suzaku and XMM
  • LETG/HRC is consistent, perhaps 5-10% high

• New HETGS EA: smooth BL Lac spectra to < 3% (.5-8 keV)

• Cross-cal with XMM-Newton on blazars near completion
  • New HETGS efficiency file provided to M. Smith
  • Latest SAS release to be used, need fixed LETG/ACIS data < 0.5 keV
  • Expect paper draft “real soon now”

• What/how to fix?
  • Criteria for correction needed
  • Empirical v. physical corrections