Propagation of ACIS background uncertainties

Maxim Markevitch

November 2005
Detector background variability

- Spectral shape of quiescent detector background is constant to \( \pm 2\% \) (rms)
Blank-sky background variability

- Shape of quiescent blank-sky background at $E > 2\,\text{keV}$ is constant to $\pm 2\%$
- Vary background normalization by $\pm 2\%$, add in quadrature
- If any residual flares have to be modeled, uncertainty is $\gg 2\%$!
**XMM** background uncertainty

EPIC background is lower by \( \times 2 - 3 \) than ACIS (as a fraction of source brightness), but less predictable:

- Standard flare filtering (as in literature): 10 – 12% rms uncertainty for 2–7 keV
- Aggressive flare filtering (Nevalainen et al. 2005): 4 – 5%