

# EPIC optical PSF

**EPIC calibration meeting**

**Saclay, 24-25 Sep. 2003**

***B. Altieri & M. Smith***



***XMM-Newton***

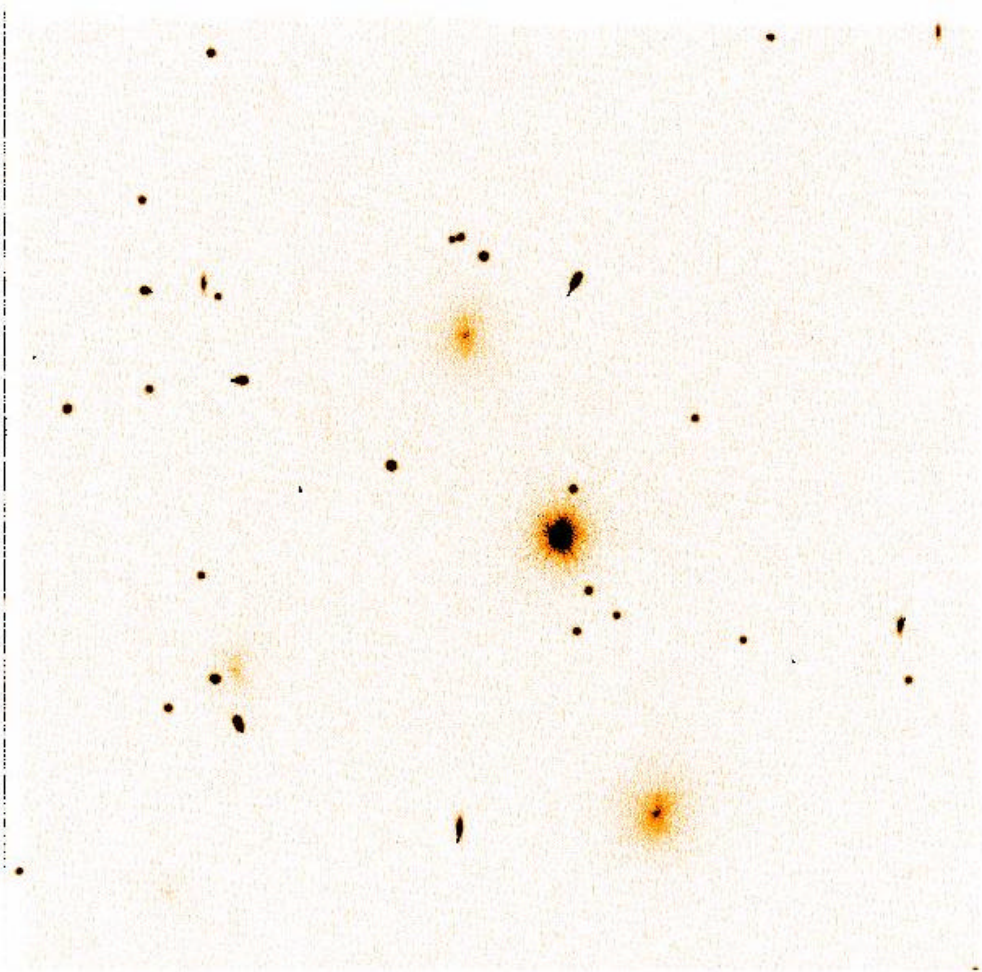
Bruno Altieri -- SCI-SDX

# EPIC optical PSF

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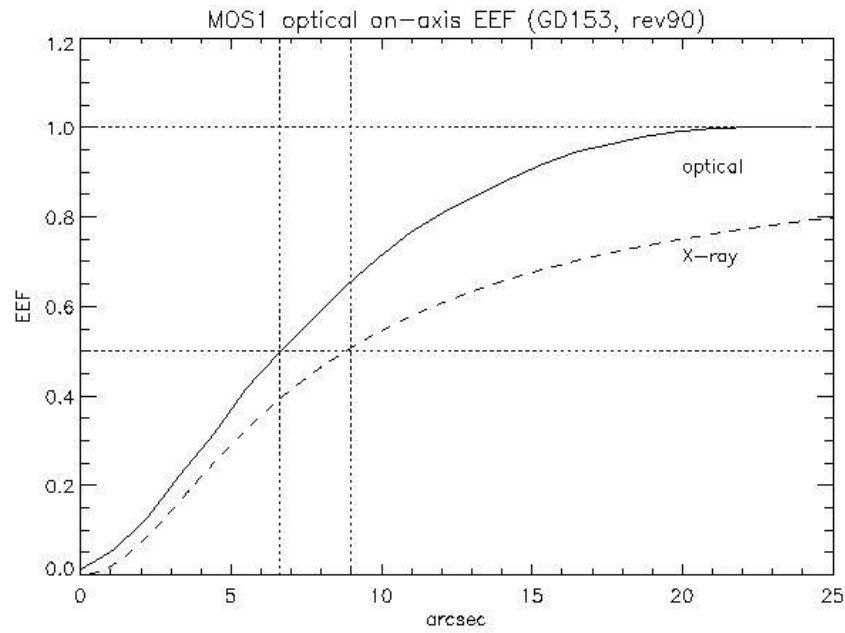
- **Objective:**
  - analyse and compares EPIC optical PSF/EEF with X-ray PSF to quantify effect of optical loading and impact of fixed-offset tables.
- **Data:**
  - MOS: diagnostics frames (2.6s) in OPEN filter on GD153
  - pn: various offset maps from Michael's library
- **Results:**
  - MOS :
    - PSF more peaked and narrower than X-ray PSF
    - MOS optical PSF degrades - faster than X-ray PSF - with off-axis angle
  - pn :
    - optical FSF appears always to be broader than the X-ray PSF, except perhaps on-axis, where the two overlap.
      - But on-axis optical PSF was derived from relatively faint optical signal and pixel size much coarser, so indicative only.

# GD 153 MOS diagnostic

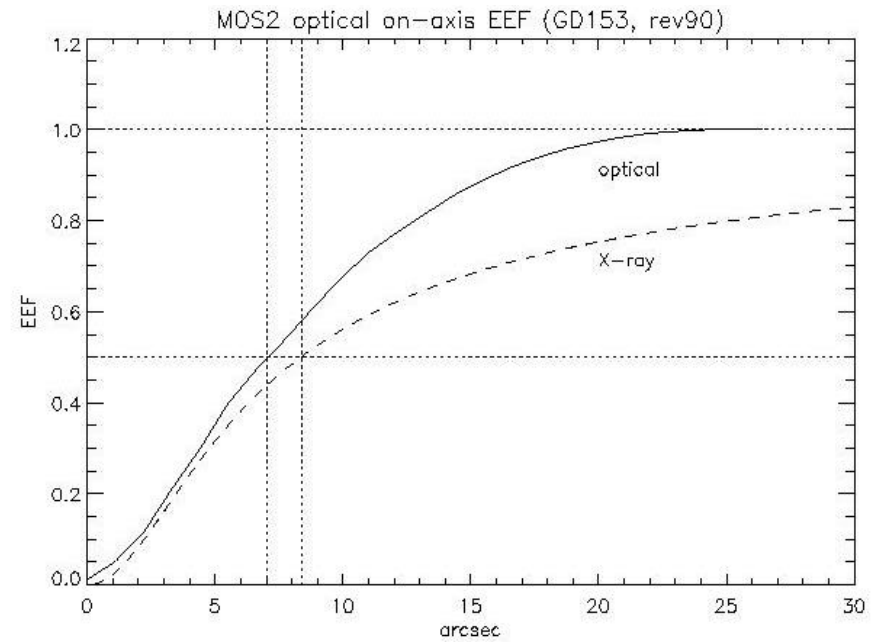


- GD 153,  $V= 13.4$
- rev 90 diagnostics, OPEN filter
- MOS1, CCD1

# MOS on-axis optical PSF

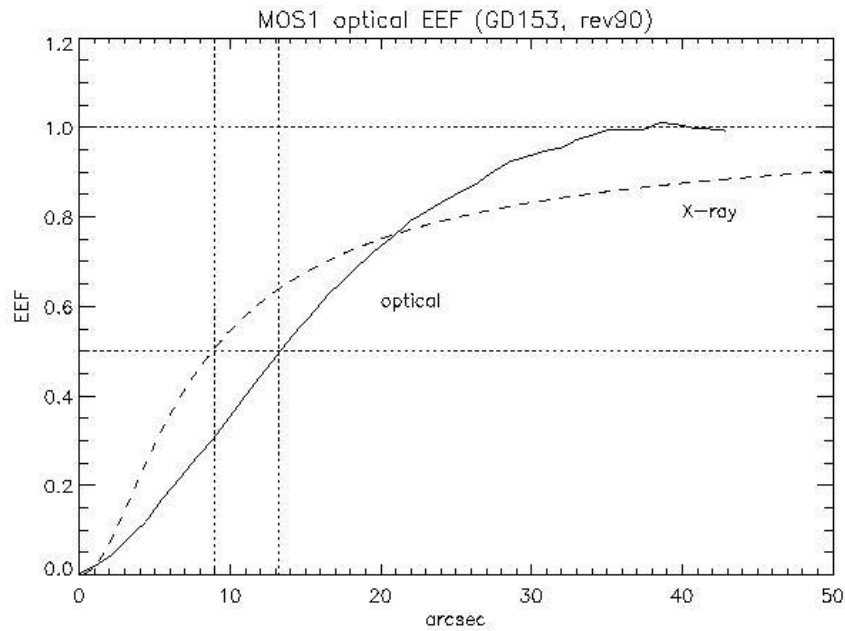


**MOS1**

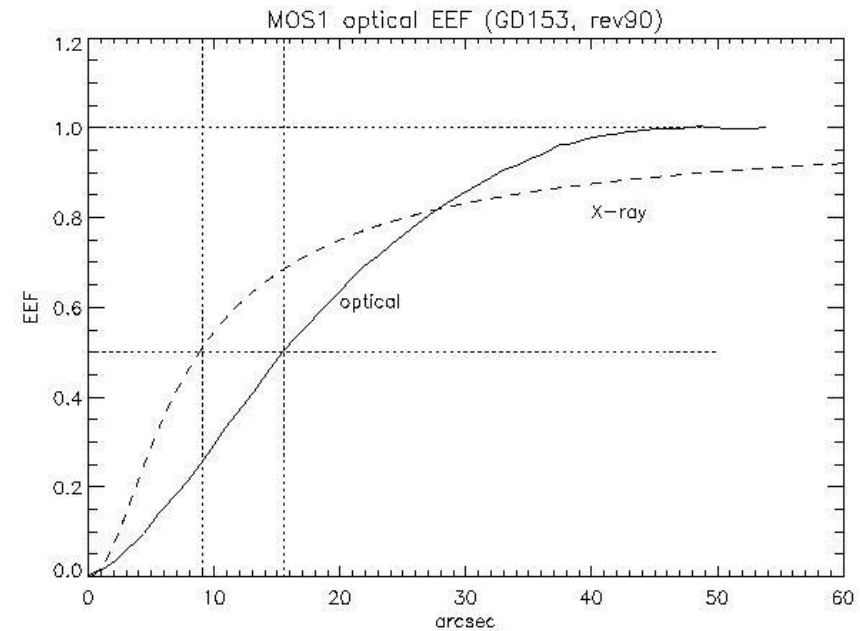


**MOS2**

# MOS off-axis optical PSF

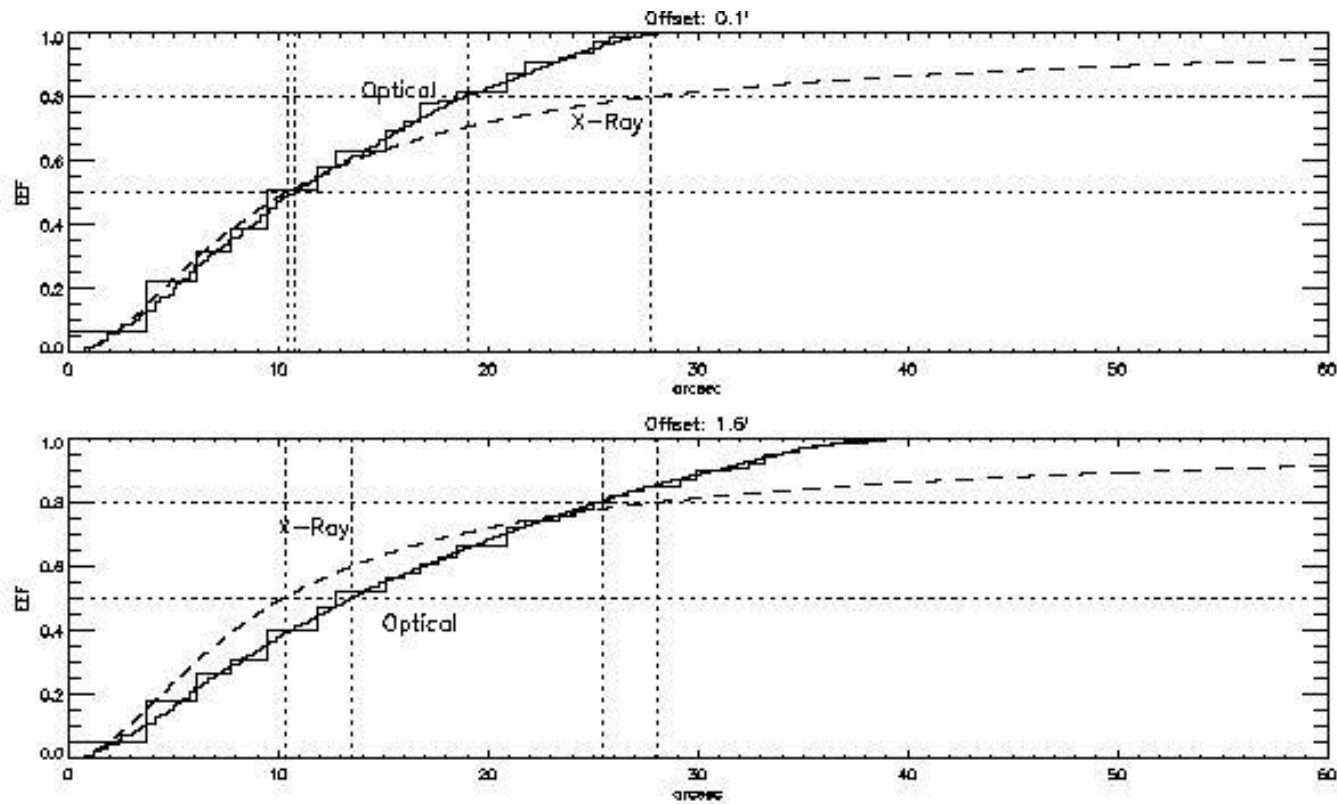


**2 arcmin off-axis**

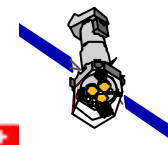


**3 arcmin off-axis**

# EPIC-pn on-axis EEF



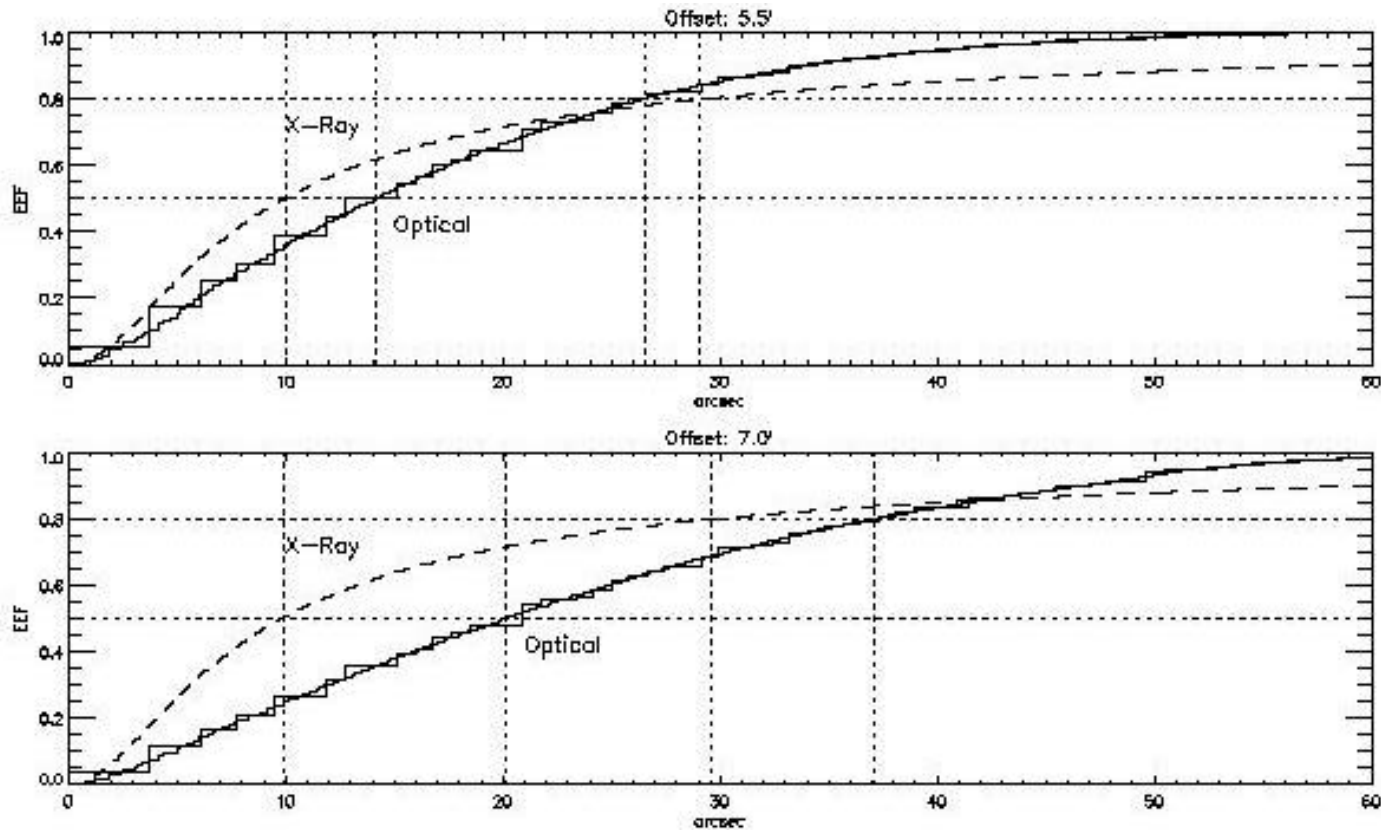
Michael Smith



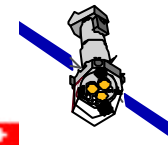
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# EPIC-pn off-axis EEF



Michael Smith



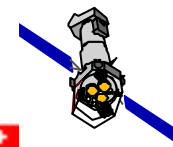
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# Conclusion - Follow-up

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- **MOS optical loading assessment in PHS-tools:**
  - OK for on-axis sources
    - fraction of optical light in central pixel = ~1% (vs 2% in Lumb's model)
    - but threshold raised to 50 ADUs/frame/pixel since AO1
  - Too conservative for off-axis sources - unchanged
- **EPIC-pn optical loading assessment in PHS-tools was much too conservative by a factor 6.**
  - Threshold raised for AO3 from 50 to 100 counts/frame/pixel
- **New diagnostics in THIN-filter this summer on OM cal. stars seems to show that optical loading is overestimated**
  - but contradictory results so far ...



**XMM-Newton**

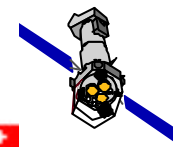
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**Now waiting for the X-ray PSF report ...**

**... of the Optical Monitor !**



***XMM-Newton***

Bruno Altieri -- SCI-SDX