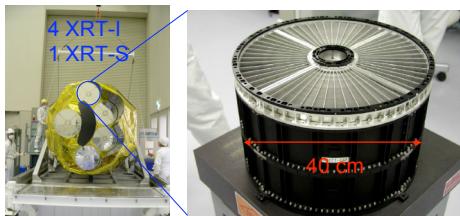


The XRT onboard Suzaku ~in-orbit performance and calibration status~

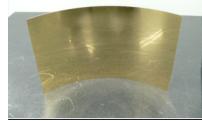
○ Hideyuki Mori (Kyoto Univ.), Manabu Ishida, Yoshitomo Maeda, Ryo Iizuka, Akiharu Itoh, Hirohiko Inoue, Shunsaku Okada, Yushi Yokoyama, Kensuke Suzuki (ISAS/JAXA), Koujun Yamashita, Hideyo Kunieda, Yuzuru Tawara, Yasushi Ogasaka, Akihiro Furuzawa, Keisuke Tamura, Ryo Shibata, Yoshito Haba (Nagoya Univ.), Peter J. Serlemitsos, Yang Soong, Kai-Wing Chan, Takashi Okajima, John P. Lehan (NASA/GSFC), Kazutami Misaki (MPE) and Suzaku XRT team

1. X-Ray Telescopes (XRT)



Telescope Design (XRT-I) :

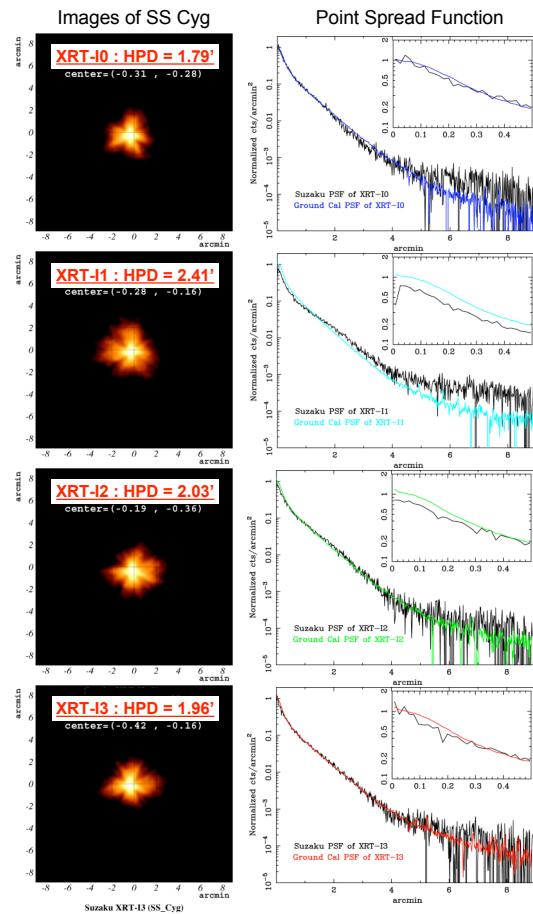
- Conical approximation of Wolter-I optics
- Thin-foil-nested structure
⇒ High throughput & light weight !
- Focal length : 4.75m
- Incident angle : 0.18° - 0.60°
- Nesting number : 175
- Total number of reflectors : 1400
- Diameter : 118mm - 399mm
- Field of view : 20' (1keV), 14' (7keV)
- Pre-collimator is equipped



- ✓ Reflector : Gold (> 1000 Å)
- ✓ Substrate : Aluminum (152μm)
- ✓ Replication method
(Serlemitsos & Soong 1996)
⇒ ~3 Å surface roughness & small figure error with a wavelength of <30μm

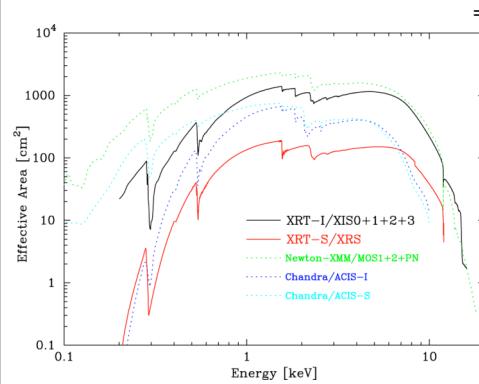
Suzaku	Chandra	XMM-Newton	
80kg	1500kg	1300kg	
1360cm²	500cm²	4000cm²	
Angular resolution (HPD)	2.0 arcmin	0.5 arcsec	15 arcsec

2. Imaging quality (© M. Ebara)



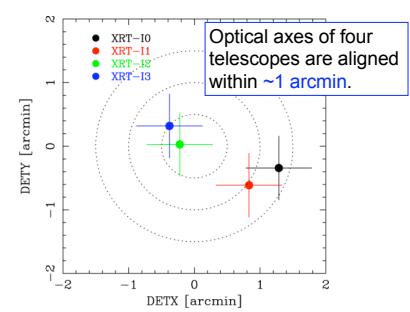
A hump at 2-4 arcmin in the PSF reflects a change of the focal length by the launch.

3. Effective Area (© Y. Maeda, S. Okada)

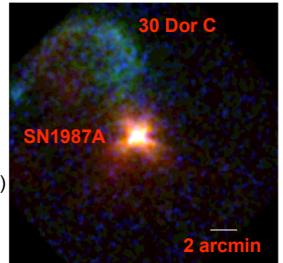
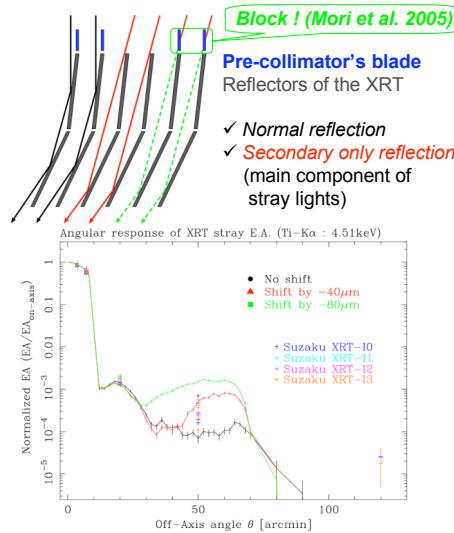


Large effective area and mild angular resolution

⇒ For extended sources, a combination of XRT + XIS onboard Suzaku can provide a highly efficient observation with imaging spectroscopies.

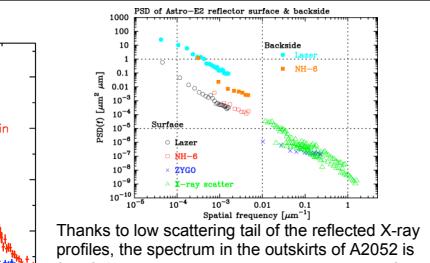
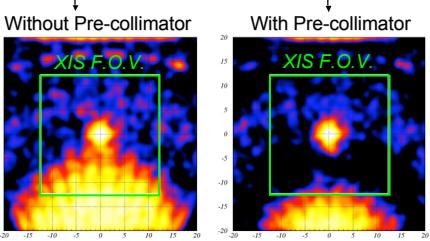


4. Pre-collimator for stray-light reduction (© H. Mori & R. Iizuka)



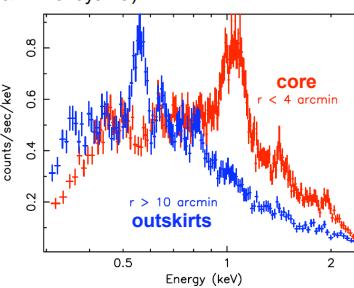
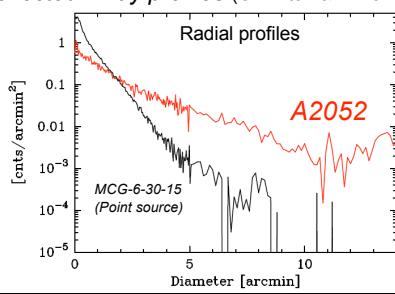
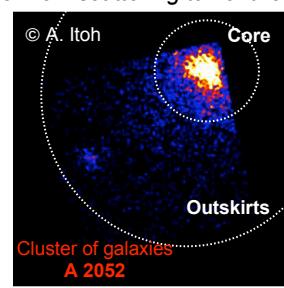
SN1987A :
Observation

Simulations
(by Ray-Tracing)

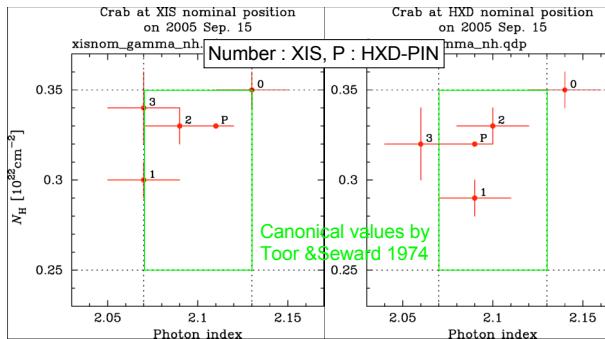
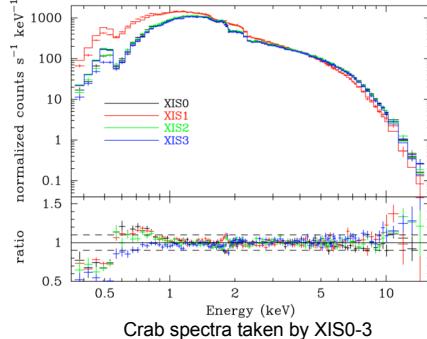


Thanks to low scattering tail of the reflected X-ray profiles, the spectrum in the outskirts of A2052 is free from the contamination by its core. Therefore, physical parameters in the outskirts of cluster of galaxies can be determined more precisely.

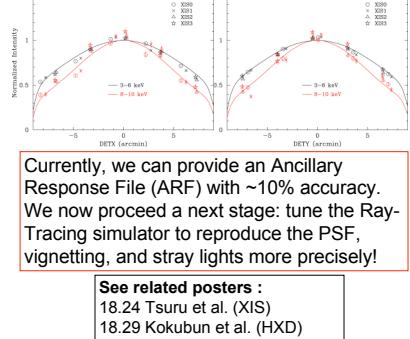
5. Low scattering tail of the reflected X-ray profiles (© A. Itoh & Y. Takei & Y. Yokoyama)



6. Current status of in-orbit calibration (© S. Okada, H. Inoue, K. Suzuki)



Vignetting function of the Suzaku XRT



Currently, we can provide an Ancillary Response File (ARF) with ~10% accuracy. We now proceed a next stage: tune the Ray-Tracing simulator to reproduce the PSF, vignetting, and stray lights more precisely!

See related posters :
18.24 Tsuru et al. (XIS)
18.29 Kokubun et al. (HXD)