Soft X-ray Telescope for ASTROSAT

Characteristics of SXT

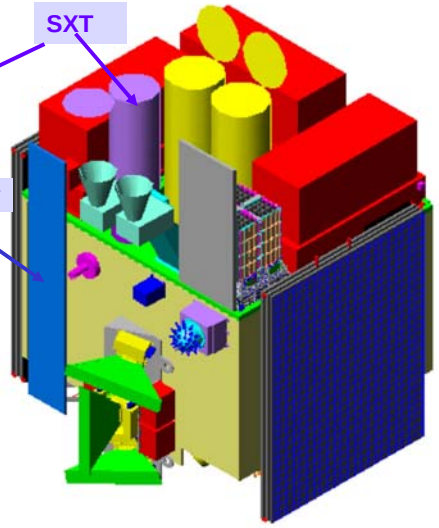
Telescope:	2.0m focal length
(grazing incidence - conical approximation to Wolter I type)	
Telescope Mirrors:	Conical shells
Telescope PSF:	<3 - 4 arcmin (HEW)
Detector:	e2V CCD-22 (Cooled < -80 deg C)
Detector Format:	600 x 600 pixels (40 microns size)
Detector Readout Modes:	Photon counting, Imaging & Timing
Field of view:	41.3 x 41.3 arcmin
Pixel Scale:	4.13 arcsec/pixel
Energy Range:	0.3 – 8.0 keV
Effective Area:	200 cm^2 @1.5 keV
	20 cm^2 @6.5 keV
Sensitivity:	1.4 cps/milliCrab
Position Accuracy:	30 arcsecs

SXT Mirrors

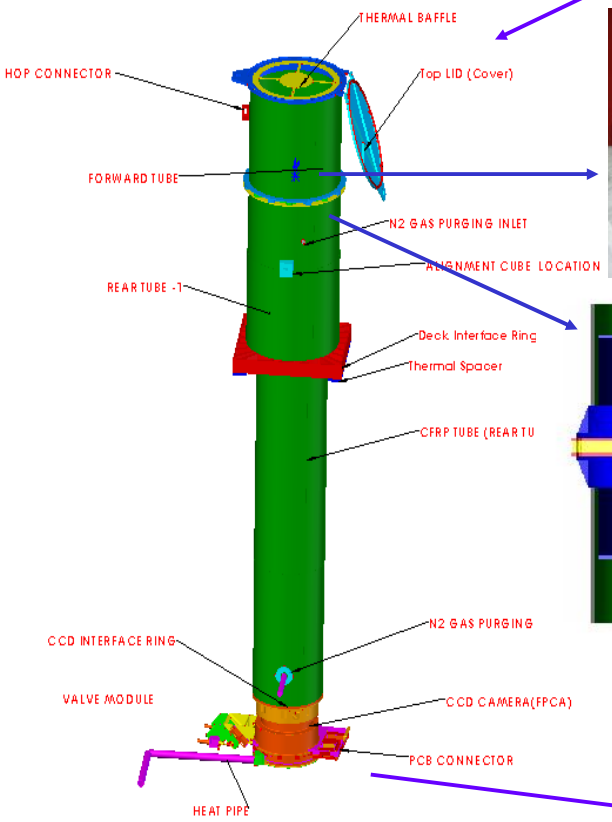
Telescope Length:	2465 mm
(Telescope + camera + baffle + door)	
Top Envelope Diameter:	386 mm
(Max at Middle flange)	
Focal Length:	2000 mm
Maximum radius of foils:	130 mm
Minimum radius of foils:	65 mm
Reflector Length:	100 mm
Reflector thickness:	0.2 mm +
Epoxy (50-60 microns) + gold 1400 Angstroms	
Minimum reflector spacing:	0.5 mm
Number of nested shells of foils:	41x8=328

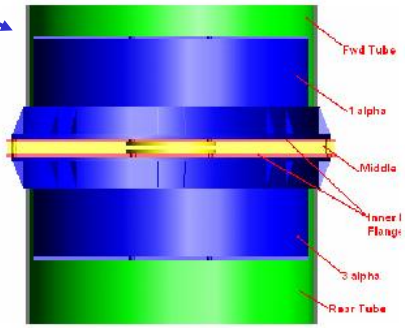
ASTROSAT

SXT

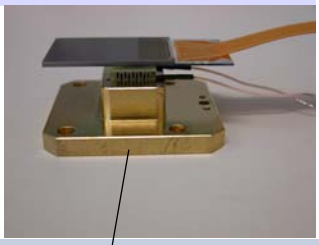


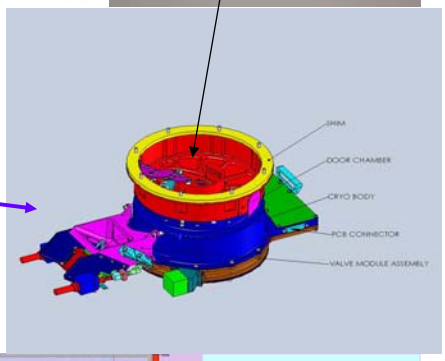
Radiator Plate for SXT





X-ray CCD with TEC and cold finger + Model of the Focal Plane CCD Camera

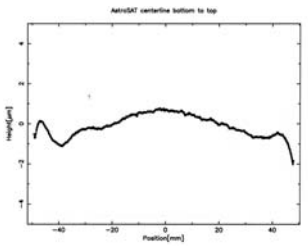


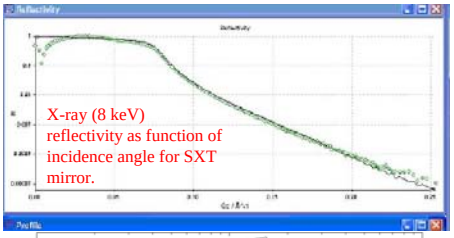


All tubes from CFRP structure (with low out-gassing): Design (TIFR,ISAC, VSSC). Fabrication at VSSC.

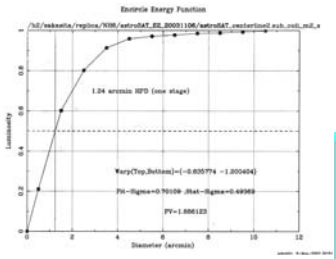
Foil mirror with replicated gold surface

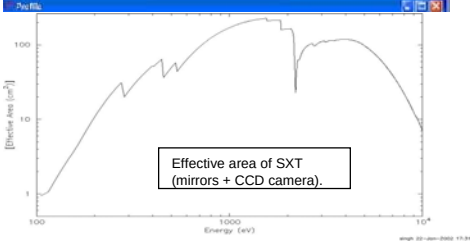
Qualification of a mirror made for SXT using X-ray beam at CAT, Indore and profilometer at Nagoya Univ.



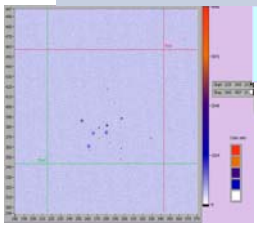


X-ray (8 keV) reflectivity as function of incidence angle for SXT mirror.

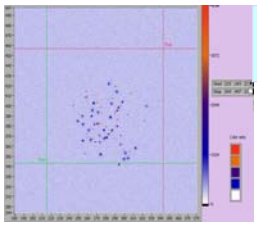




Effective area of SXT (mirrors + CCD camera).

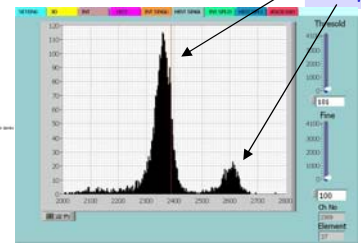


X-ray events recorded on the CCD in 2.5 sec @ -100 ºC



X-ray events recorded on the CCD in 5 sec @ -100 ºC

X-ray spectrum of Fe55 radioactive source obtained in the Lab. with the e2V CCD-22. It shows Fe-Kα (5.9 keV) and Fe-Kβ (6.4 keV) lines



TIFR
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