

The Sun's Corona as Seen by Hinode X-Ray Telescope (XRT)

Taro Sakao[1]

[1] ISAS/JAXA

We present highlights of initial observations from the X-Ray Telescope (XRT) for the Solar-B/Hinode mission. The XRT is a grazing-incidence imager with a Walter Type-I-like mirror of 34 cm diameter, together with a back-illuminated CCD device mounted on a focus adjustment stage. The XRT is capable of imaging the X-ray corona of the Sun with angular resolution as high as 1 arcsec, the highest ever achieved as a solar X-ray telescope. In addition to this unprecedentedly-high angular resolution, enhanced sensitivity of the CCD towards longer X-ray wavelengths (particularly beyond 50 Angstroms), coupled with an optimized set of thin metal filters to be inserted in front of the CCD, the XRT can image, and perform temperature diagnostics on, a wide range of coronal plasmas from those as low as ~ 1 MK to high-temperature plasmas even exceeding 10 MK. This adds a notable advantage to the XRT such that it can observe most, if not all, active phenomena in the corona throughout their entire temperature evolution.

Since the beginning of observations with XRT on 23 October 2006, around, or more than, 2,000 images have been taken each day including four sets of synoptic full-Sun images taken approximately every 6 hours. The XRT has so far observed various interesting coronal activities. These include (1) frequent occurrence of X-ray jets in polar regions of the Sun, (2) continuous outflow of plasmas from the edge of a solar active region that is likely to be a source of (slow) solar wind, (3) clear signature of eruptions for activities even down to GOES B-level, (4) detailed structure and evolution of flaring loops, and so on.

New views of the corona as revealed by Hinode XRT will be presented and their implications to the space weather research discussed.