New solar coronal view with HINODE/X-Ray Telescope

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The solar corona is the solar atmosphere with its temperature more than 1MK. The corona seen in X-rays is very active and dynamic. In the corona, many energetic events frequently occur, e.g., the largest explosions in our solar system called flares, small explosions called micro-flares, jets and so on.

HINODE/X-Ray Telescope (XRT) observes such hot corona in X-rays with high spatial resolution of 1 arcsec = 730 km on the solar disk. High resolution images with the XRT gave us a new solar coronal view. For example, flare loops are resolved into fine loop structure. The X-ray bright 'points' discovered with previous X-ray telescope are identified as the small loop structures. Moreover, in the quiet region and polar region, in which the coronal activity looks small, there are many activities seen in XRT images. XRT gives us new realization that the quiet region and polar region are not quiet.

In the meantime, XRT has 9 X-ray filters, each of which having the different temperature response to each other. Using these filters, XRT can observe the corona at a very wide temperature range of from 1MK to more than 10MK. Simultaneous observation with more than 2 different filters enables us to analyze the coronal temperature and also estimate the emission measure. So, XRT provides us with coronal temperature movies with high spatial and temporal resolution. These movies make clear where the coronal heating occurs and how the energy is transfered and dissipated.

As stated above, HINODE/XRT gave us the new solar coronal view. In this lecture, we summarize the performance of XRT and show the latest movies taken with XRT.