Micro-flares observerd with Hinode X-ray Telescope

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The solar corona consists of million degree plasmas. It is believed that magnetic energy on the solar photosphere is transferred to the corona and released. However, the mechanism to heat the corona is still unclear. To reveal the relation between photospheric magnetic activities and coronal responses, micro-flares may be a good target. The X-Ray Telescope (XRT) aboard the Hinode satellite can observe many micro-flares especially in active regions. Because XRT has the high spatial resolution (1 arcsec/pixel) and the high flexibility of the time resolution, it is suitable for the study of spatial and temporal fine structures of such small energetic events.

On November 14, 2006, XRT observed an active region with a fast cadence. Nine micro-flares occurred in 30 minutes. Three of them had jet structures whose apparent velocity was 100-500km/sec. They may be caused by the interaction between newly emerged magnetic flux and existing flux. In X-ray time profiles, there were spiky structures even in a single event. It may show that a micro-flare is a bundle of unresolved events. The detail analysis between magnetic activities on the solar photosphere observed with the Hinode/SOT (Solar Optical Telescope) and coronal reactions will be also discussed.