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太陽フレアにおけるコロナ中の硬 X 線源の時間変化
Temporal behavior of the coronal hard X-ray source in solar flares

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In Sui & Holman 2003 and Sui et al. 2004, they analyzed a few flares occurred on the northwest limb (NOAA Active Region 9011) from April 14 to April 16, 2002, which were well observed with Reuven Ramaty High- Energy Solar Spectroscopic Imager (RHESSI). When the impulsive rise in hard X-rays began, the cusp part of the coronal source separated from the underlying flare loop and remained stationary for about 2 minutes. During this period, the underlying flare loops shrank. This phenomenon is very important to understand the energy-release process in solar flares since it might be closely related with magnetic reconnection. This has been reported for the first time by using the RHESSI data, even though Yohkoh observed more than 3,000 flares during its operational period (1991-2001). The purpose of this research is to verify quantitatively this phenomenon by using Yohkoh data.

The hard X-ray telescope (HXT) on board Yohkoh has an advantage to achieve it. This source motion takes place at the early phase of a flare. This means the number of photons is not enough to synthesize a hard X-ray image with a high quality. HXT has so-called fan-beam type sub-collimators. Using them, information on the source location can be derived without image-synthesis process. Also Yohkoh is not a spinning satellite and the time resolution is 0.5 second. Thanks to these characteristics, Yohkoh/HXT enables us to reveal the behavior of the coronal hard X-ray source in the early phase of a flare. First, we checked how this method worked for a well-known flare which has a moving hard X-ray source. In this presentation, we show the result of this test and discuss the limitation of this method.