

**M05a            Restoration and Interpretation of *Yohkoh* SXT Images**

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Due to the finite width of the point spread function (PSF) of *Yohkoh* SXT mirror, a certain amount of blurring effect is expected inherent in the observed soft X-ray images. Thus it is necessary to subtract its effect from the observed images for both morphological and photometric purposes. Nevertheless, due to the effect of undersampling by a large pixel size of the CCD, the application of the general algorithms for the image restoration has always shown unreasonable structures for the SXT images. Therefore, without increasing the sampling density of the observed images it seems difficult to restore the images in a reasonable way. We have developed a new method for increasing the sampling density for *Yohkoh* SXT images under the condition of the photon flux conservation inside each pixel of the CCD. A concept of variance optimization in/between pixels has been applied to a two dimensional discrete distribution of intensity data.

The best-fit of the PSF to the ground experimental data is acquired under the consideration of undersampling effect. Our result shows that the core of the Moffat function which models the PSF is smoothly connected to the scattering wing at the distance of about 6 to 40 pixels from the peak. For the wavelength dependence of the PSF, the first-order vector perturbation theory is used for the estimation of the distribution of the scattering component. The distribution is determined from the comparison with the result of in-flight data analysis.

An algorithm of maximum entropy method is used for the restoration of the observed SXT images. The restored images show clearly features of the coronal loops which were seldom shown previously from the observed images. Especially, it is revealed that the restoration of the SXT images makes the intensity enhancement of about 20% at the peak area. Using the restored images of *Yohkoh* SXT, several physical quantities have been calculated as case studies. The results of the calculation will be presented and discussed in detail.