M21b Determination of the Point Spread Function of Yohkoh Soft X-ray Telescope

Junho Shin and Takashi Sakurai (NAOJ)

The point spread function (PSF) of *Yohkoh* soft X-ray telescope (SXT) has been determined for the deconvolution of the densely-sampled observed images (Shin and Sakurai 1998). A couple of experiments for the determination of the PSF had been performed prior to the launch of *Yohkoh* SXT (Tsuneta *et al.* 1991; Martens *et al.* 1995). However, the analyses using two different data sets suggested largely different results of the PSF, which makes us difficult to apply it to the deconvolution of the observed images. For this reason, we have re-analyzed the ground experimental data and tried to interpret the result in a more consistent way. The best-fit model of the PSF to the ground experimental data is acquired under the consideration of undersampling effect at the central area of the PSF. 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. Deconvolution of the images observed in different energy bands requires different forms of PSF because the scattering component of the PSF has a wavelength dependence. In our study, first-order vector perturbation theory is adopted for the consideration of the wavelength dependence of the scattering component, and is used for the estimation of its total intensity and radial distribution. The angular distribution of the scattering component is determined from the result of in-flight data analysis. The results of the wavelength dependence of the PSF will be discussed in detail.