



## **CME-induced Outflows Observed with Hinode/EIS**

M. Jin (1), C. Fang (1), M.D. Ding (1), P.F. Chen (1), and S. Imada (2)

(1) Department of Astronomy, Nanjing University, Nanjing 210093, China, (2) National Astronomical Observatory of Japan, 2-21-1 Osawa, Mitaka, Tokyo 181-8588

Using the Hinode/EIS observations, we investigate the outflows associated with two halo CMEs occurred on 2006 December 13 and 14 in NOAA 10930. Each CME was followed by an EIT wave and coronal dimming. Dopplergrams in the dimming regions are obtained from the spectra of 7 EIS lines. Our results show that strong outflows are visible in the dimming regions at different heights during the CME eruption. It is found that the velocity is positively correlated with the photospheric magnetic field, as well as the relative changes of the intensity of the dimming. Based on height-dependent EUV dimming, we estimate the mass loss and find it to be smaller than the CME mass derived from LASCO white-light observations. The mass difference is attributed probably to the uncertain solar atmospheric model, and the chromospheric outflows, which refill the coronal dimming. The lifetime of the coronal dimming is estimated based on the refilling velocity at the coronal base.