

Converging Motion of the Conjugate Kernels of an M1.1 Solar Flare

T.H. Zhou (1,2), H.S. Ji (1)

(1) Purple Mountain Observatory, CAS, Nanjing, China, (2) Graduate School of CAS, Beijing, China (thzhou@pmo.ac.cn)

We present the results from high-cadence (~ 40 ms) $H\alpha$ blue wing observation of an M1.1 class solar flare, which occurred in NOAA Active Region 10687 on 2004 November 1. In collaboration with RHESSI, the observation was made with the $H\alpha$ Fine Structure Telescope at GanYu Solar Station of Purple Mountain Observatory. For this flare, a pair of conjugate $H\alpha$ kernels shows the kind of converging motion during the impulsive phase. After the impulsive phase, there appears normal separation motion. The motion of one $H\alpha$ kernel is perpendicular to the magnetic neutral line (NL), while another kernel's converging shows both perpendicular and parallel components. Nevertheless, the shear angle decreases during the converging motion, clearly showing the relaxation of a sheared magnetic field. All above features are confirmed with HXR footpoints observed by RHESSI. We also obtained the time profiles of changing rate for the shear angle and the relative velocity of the two kernels with $H\alpha$ observations. Both kinds of time profile show a good correlation with RHESSI HXR light curve in the higher energy range (> 50 keV). This indicates that, during the peak times of the flare, the relaxation process may have occurred rapidly.