

Coronal disturbances associated with the 2011 August 9 solar flare

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We report simultaneous observation of an H-alpha Moreton wave, the corresponding EUV fast coronal waves, and a slow and bright EUV wave (typical EIT wave). We observed a Moreton wave, associated with an X6.9 flare that occurred on 2011 August 9 at the active region NOAA 11263, in the H-alpha images taken by SMART at Hida Observatory of Kyoto University. In the EUV images obtained by the Atmospheric Imaging Assembly on board SDO we found not only the corresponding EUV fast "bright" coronal wave, but also the EUV fast "faint" wave that is not associated with the H-alpha Moreton wave. We also found a slow EUV wave, which corresponds to a typical EIT wave. Furthermore, we observed the oscillations of a prominence and a filament, simultaneously, both in the H-alpha and EUV images. To trigger the oscillations by the flare-associated coronal disturbance, we expect a coronal wave as fast as the fast-mode MHD wave with the velocity of about 570-800 km/s. These velocities are consistent with those of the observed Moreton wave and the EUV fast coronal wave.

Keywords: solar flare, solar corona, filament eruption, filament oscillation, shock waves, magnetohydrodynamics