A24a

Prominence oscillation and compression as evidence of shock nature of globally propagated EUV wave

Takuya Takahashi, Ayumi Asai, Takako Ishii, Kiyoshi Ichimoto, Kazunari Shibata(Kyoto Univ.)

X5.4 flare occurred on 2012 March 7 at AR NOAA11429 which was associated with very fast CME with the velocity of about 2500km/s. The CME reached the earth and drove a large magnetic storm. In SDO/AIA images, we found a dome like structure expanding globally after the onset of the flare and EUV wave propagating at the foot print of the dome. The EUV wave reached the north pole and drove large amplitude prominence oscillation. At the same time, we found prominence brightening as a result of compression. Additionally, in STEREO/COR1 images, a shock front launched from the expanding CME flank was seen to reached the location of the oscillated prominence which was coincident with the onset of prominence oscillation in AIA images. Taking these into account, we concluded the observed EUV wave was a MHD fast mode shock front propagated ahead of the CME flank. Thanks to high cadence observations, we now know fast and globally propagating EUV waves are often launched with CMEs, and these waves are well explained by MHD fast mode shock interpretation. This report is one of the evidences of this interpretation. We also evaluated the compression ratio of the EUV wave as a shock using initial velocity of the prominence oscillation. In this talk, I will discuss potential of study of EUV waves in the context of space weather though reporting a way to investigate the shock properties in the corona by analyzing coronal disturbances such as prominence oscillations.