

A08b

Formation of triggering region of M6.6 Flare in NOAA AR11158

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We investigate the formation process of the magnetic field structure in NOAA AR 11158 from its birth to the M6.6 flare, which occurred at 17:28 UT on 2011 February 13. AR 11158 showed prominent activities, including one X-class flare and some M-class flares. This region has a high potential for flare study, not only because it showed high activities but also because it existed in the earth-side of the solar disk from its birth. The analysis of the whole region was shown in the presentation M05b of 2013 ASJ Autumnal Meeting, in which we reported that the magnetic configuration that triggered the M6.6 flare had a Reversed-Shear (RS) type structure, one scenario suggested by Kusano et al. (2012). Therefore, in this study, we aim to understand the formation process of such a triggering configuration. For conducting a detailed analysis, we use CaH line images and spectropolarization data obtained by Hinode/SOT, vector magnetograms by SDO/HMI, and EUV images by SDO/AIA. We found that the triggering region was initially built at 08:00 UT on February 13, through the continuous accumulation of small emerging bipoles. In CaH images, the emerging bipole collided with the pre-existing field and, through magnetic reconnection, they created a new loop connecting the both fields. However, this RS type structure was collapsed after the C4.7 flare at 13:44 UT. Then, around 14:00 UT, this RS structure was rebuilt via another collision of emerging bipoles, which eventually triggered the M6.6 flare.