

KINEMATICS AND EUV BRIGHTENING EVOLUTION OF A SURGE TRIGGERING AN ERUPTIVE PROMINENCE

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We study a solar surge in AR SPoCa: SOL2014-03-14T04:081 using the multiwavelength data obtained by Atmospheric Imaging Assembly (AIA) of Solar Dynamics Observatory (SDO) on 2014 March 14. The surge appeared at the eruptive prominence (EP) footpoints and rises vertically up to a height of ~ 73 Mm then it falls and fades gradually. Its total lifetime was ~ 65 minutes. The surge rising clearly showed two subphases: accelerative and decelerative. The accelerative subphase showed speeds in the range 3-65 km/s at accelerations 0.5-129 m/s². During the deceleration the surge rose with constant deceleration of -54.8 m/s² and at falling speeds 65-13 km/s. During the downflow phase the surge plasma fell back with a speed of 27 km/s. The analysis of surge EUV brightening, as a signature of tether-cutting (TC) reconnection revealed four brightening episodes. The results infer that TC reconnection led to the surge triggering in first episode and the surge splitting and EP bright flux rope origin in second and third episodes, as well. The EUV brightening at the footpoints of surge-EP event and in the thin BFR in fourth episode was due to surge mass impact at footpoints. The crucial role of the BFR for the further EP evolution infer that the surge via TC reconnection triggered the EP.