

The kinematics and energetics of an eruptive filament

R. Liu, D. Alexander

Rice University, Houston, Texas, USA (rliu@rice.edu / Phone: +1 713-3483409)

We study the kinematics and energetics of an eruptive loop-like filament observed on Aug 25, 2003, mainly utilizing high cadence RHESSI hard X-ray and TRACE EUV data. The eruption is accompanied by a GOES C3.6 flare and a CME appearing about half an hour later in LASCO C2. The filament was characterized by a slowly developing activation phase, followed by a sudden jump in height and subsequent eruption. The sudden transition in the filament dynamics coincided with the onset of high energy hard X-ray production, indicating the presence of accelerated electrons produced by the erupting filament. The observed 3-phase dynamical evolution is reminiscent of the loss-of-equilibrium model proposed by Lin and Forbes, with the energetic particle production signifying fast magnetic reconnection required in this model for eruption. We explore the observed behavior in the context of this model.