
Contribution ID: **73** Type: **Poster**

# On the onset of small-scale transients

Solar transients exhibit different length, time and energy scales. Especially, the high-resolution observation facilities are drawing attention to the small scale transients for their possible roles in heating the atmosphere. However the onset of these events is not clearly understood. Here, we have taken a combined approach of observation and numerical studies to understand the triggering process. We have used the data of AIA/SDO, XSM/Chandrayaan-2 and IRIS who captured these small events (intermittent hot/cool loop systems, micro/nano-flares). To explore the underlying magnetic topology/properties, we have extrapolated the photospheric magnetic field using HMI/SDO. For this purpose, we have utilized the non-force-free-field (NFFF) extrapolation model. In this model, the bottom boundary possesses a non-zero Lorentz force which decays over height to give a nearly force-free region as per the usual trend seen in solar corona. Energy estimates highlight the role of flux cancellation in powering such events. Again, from the extrapolation we found a series of small connectivities collocating the multi-thermal loop systems seen in the observation. These field lines can interact with each other and reconnect component wise at a higher height attributing to the heating of the loop systems or triggering the small scale flares.

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**Session Classification:** Posters

**Track Classification:** Flares and Eruptions