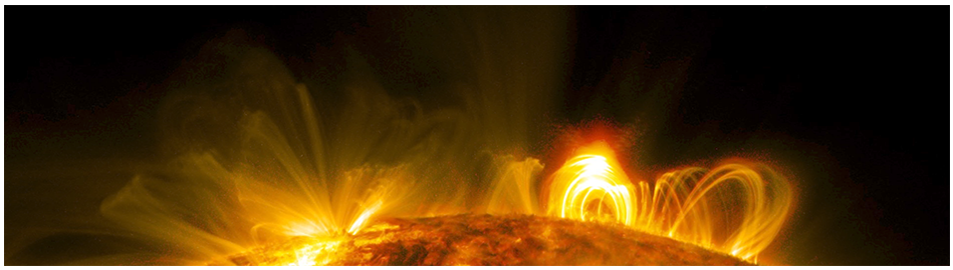

Contribution ID: **28** Type: **Contributed talk**

Hot Plasma Flows and Oscillations in the Loop-top Region During the 2017 September 10 X8.2 Solar Flare

Monday 15 November 2021 12:30 (15 minutes)

In this study, we investigate motions in the hot plasma above the flare loops during the 2017 September 10 X8.2 flare event. We examine the region to the south of the main flare arcade, where there is data from the Interface Region Imaging Spectrograph (IRIS) and the Extreme ultraviolet Imaging Spectrometer (EIS) on Hinode. We find that there are initial blueshifts of 20–60 km/s observed in this region in the Fe XXI line in IRIS and the Fe XXIV line in EIS, and that the locations of these blueshifts move southward along the arcade over the course of about 10 minutes. The cadence of IRIS allows us to follow the evolution of these flows, and we find that at each location where there is an initial blueshift in the Fe XXI line, there are damped oscillations in the Doppler velocity with periods of ~400 s. We conclude that these periods are independent of loop length, ruling out magnetoacoustic standing modes as a possible mechanism. Microwave observations from the Expanded Owens Valley Solar Array (EOVSA) indicate that there are nonthermal emissions in the region where the Doppler shifts are observed, indicating that accelerated particles are present. We suggest that the flows and oscillations are due to motions of the magnetic field that are caused by reconnection outflows disturbing the loop-top region.

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