



## **On the relationship of late phase loop arcades with confined solar flares**

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The second enhancement of irradiances of warm line (Fe XVI 33.5 nm) after the solar flare is defined as EUV late phase. According to previous studies (e.g., Liu et al. 2013), the late phase is originated from a set of big loop arcades (late phase loop arcades) besides the flare loops in the same active region. While a failed eruption is involved, the late phase peak tend to be much larger than the main peak, named as extremely large EUV late phase (Liu et al. 2015). In this study, we track a series of flare events with EUV late phase in the same active region (NOAA 11598), which include 4 strong flare events and several C class event, and most of them are confined. From these events, we try to understand the formation, evolution and influence of the late phase loop arcades, and their role in the confined solar flare events.