

Magnetic Reconnection Before a Filament Eruption

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We present a direct observational evidence for magnetic reconnection taking place *prior* to eruption. This is distinct from post-eruption reconnection, which normally leads to two-ribbon flares. In the present work we have observed an active region filament eruption in H α lines (line center, $\pm 0.5 \text{ \AA}$) and longitudinal magnetograms at Big Bear Solar Observatory. The cadence is about 1 minute each for H α and magnetogram. During 8 hours of observing run, we covered complete phases of filament eruption and two-ribbon flare.

From H α and photospheric magnetogram movies, we found ① a rapid connectivity change in filament loop before its eruption and ② a cancelling magnetic feature in the vicinity of filament loop where the connectivity changed. The measured magnetic flux started to decrease before the connectivity change and kept decreasing steadily throughout the change. The resulting dynamical phenomena will be described and discussed.