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Investigating Energy Release during Solar Eruptive Events with RHESSI, STEREO, and SDO

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In this work, we seek to understand the relationships among magnetic reconnection, flare energy release and initiation/acceleration of coronal mass ejections (CMEs) for solar eruptive events. RHESSI, STEREO, and SDO data are utilized to study the relative timing between the HXR, CME acceleration, and reconnection rate profiles for 12 CME-flares. This analysis expands upon previous CME-flare timing studies by examining the fast-varying features, or “bursts,” in the HXR and reconnection rate profiles. These bursts represent episodes of energy release which can provide insight on reconnection and acceleration mechanisms during the eruptive event. We find, qualitatively, that the analyzed events fall into two categories: events with a single dominant HXR burst and events with a train of multiple HXR bursts. Through this work, we explore how intermittent energy release impacts the evolution of CME-flares.

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