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Three-dimensional reconnection in solar flares

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We report on identification of new three-dimensional reconnection geometries in eruptive solar flares. These involve reconnection of the erupting flux rope either with the surrounding corona (ar-rf reconnection) or with itself (rr-rf), leading to creation of new flux rope field lines and flare loops. In addition, the CME legs are found to drift across the solar surface. The new reconnection geometries were observationally verified in multiple flares, including the discovery of the general saddle-shape of solar flare arcades, and observations of direct conversion of filament strands to flare loops.

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