

Flux Ropes: Observations of their evolution prior to eruption

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After years of study there is now strong support that many coronal mass ejections are caused by the eruption of a magnetic flux rope from the solar atmosphere. This talk will look at the formation and evolution of these twisted magnetic field configurations in a selection of active and quiet sun regions, using a range of imaging and spectroscopic techniques. Convergence of opposite polarity magnetic fragments along a polarity inversion line, and their subsequent magnetic reconnection, supports the formation of flux ropes in a manner following the model of van Ballegoijen and Martens (1989). Following this, the observations suggest that flux ropes may evolve their specific magnetic configuration and that they may only be stable on the Sun for a few hours before they erupt as a CME, in line with the latest theoretical and modelling expectations.