

A04a **Does Magnetic Helicity Matter in Solar Eruptions?**

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One of the long-standing problems in the space weather research is what makes an active region to suddenly erupt, as manifest in eruptive flares, prominence eruptions, and coronal mass ejections. Two kinds of conserved physical parameters are of interest in this regard: magnetic energy and magnetic helicity. Definitely a solar eruption may be regarded as the process of magnetic release in the active region through the sudden transition from high magnetic energy configuration to low magnetic energy one. This transition, however, is not enough for eruptions, as evidenced by non-eruptive flares. Magnetic helicity may play a role in this regard, which is strongly suggested by the observational fact that interplanetary magnetic clouds usually have helical structures. Moreover, there have been a bunch of observational studies indicating that the injection of significant amount of magnetic helicity into the corona may be important in solar eruptions. But we know little about how helicity affects solar eruptions. Does helicity really matter in solar eruptions or is it simply another manifestation of free magnetic energy that is primarily important? I will briefly review the recent relevant studies and will add one effort of mine for the ultimate answer: an attempt to relate magnetic helicity to the driving force of an eruption.