

## SHINE Session 13:

How can we improve our understanding of the formation and magnetic nature of filament channels and the mechanisms by which they erupt?

- Follow-up on our Shine 2019 session on pre-eruptive configurations
- We now extend the discussion to eruption-initiation mechanism(s)
- ISSI team 2016/18 → Patsourakos *et al.* (2020) SSRv paper

# Outline

- Two scene-setting speakers will present different views (G. Aulanier & B. Kliem)
- Q & A and debate. New format: you submit questions via **slido**, our expert speakers answer & (may) debate them (we would appreciate your feedback!)
- Open Discussion

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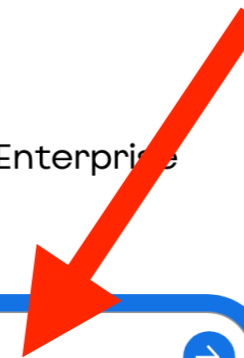
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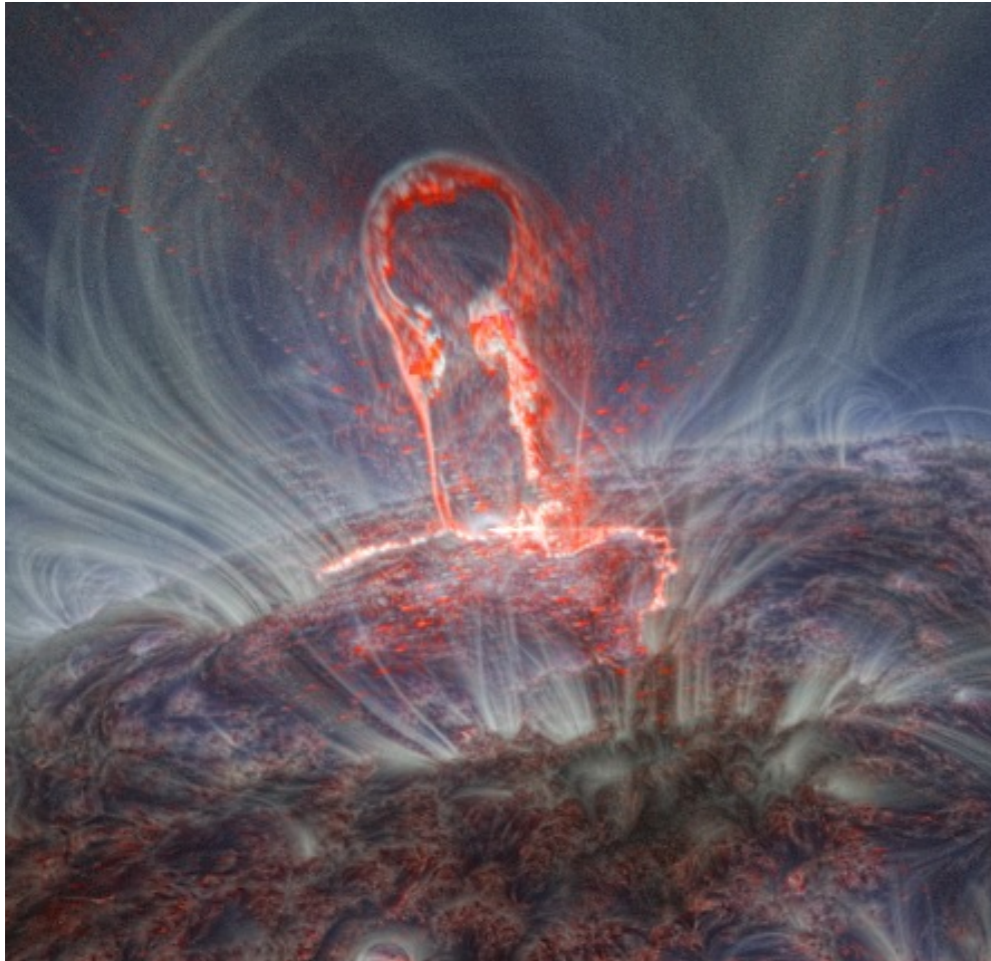


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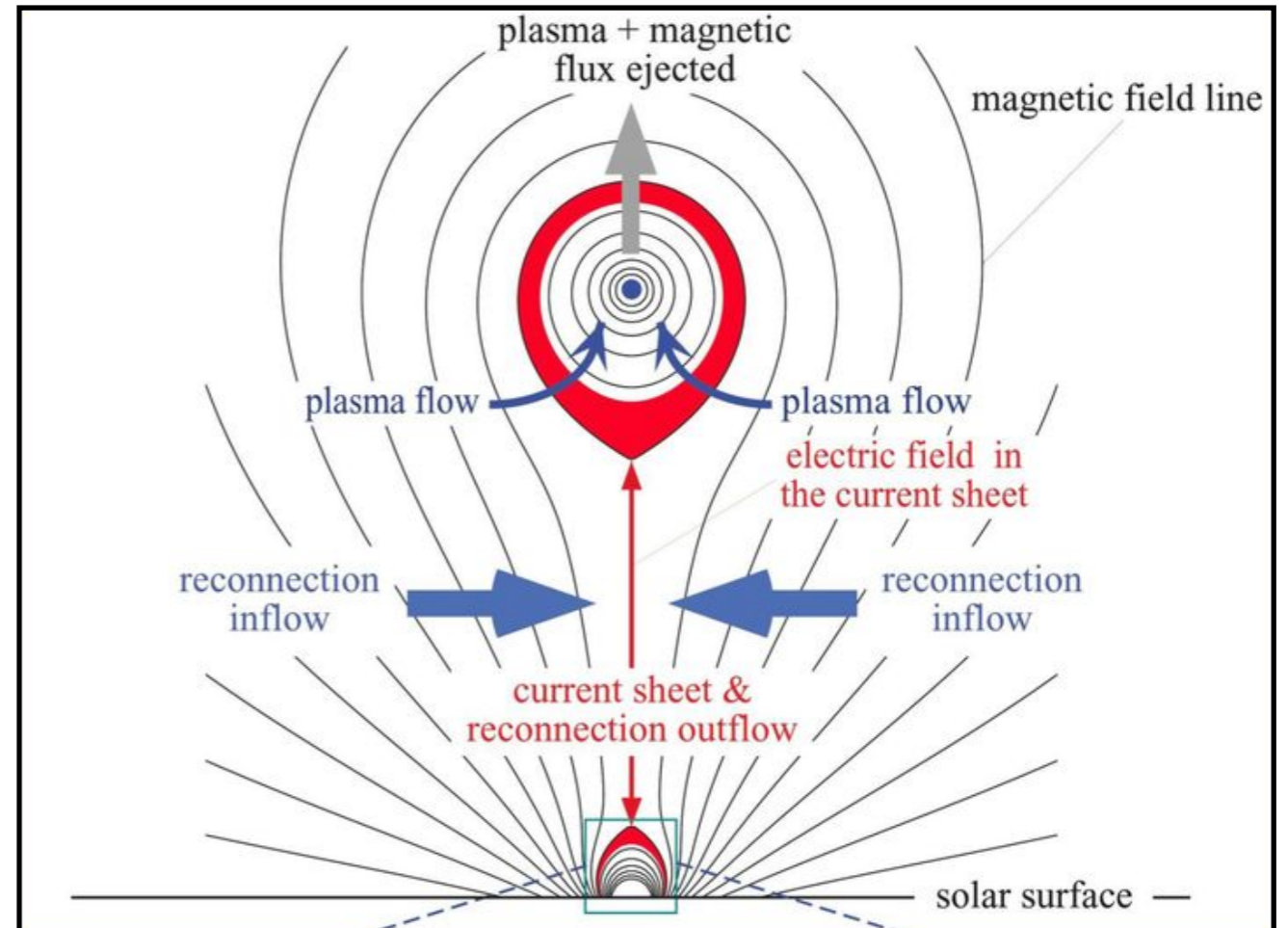


please indicate whether you are a student, postdoc, or "senior"

# Solar Eruptions



courtesy M. Druckmüller

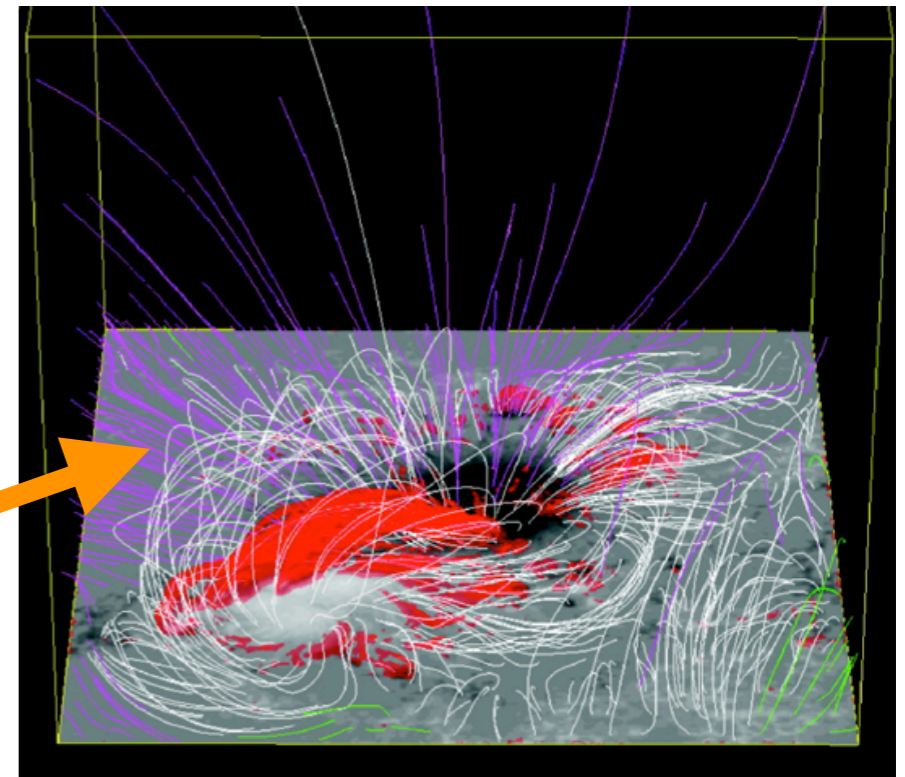


Lin & Forbes (2000)

- CME, flare, prominence eruption (all three in large events)
- Sudden & violent reconfiguration of magnetic field in corona

## How do eruptions work? ("*storage & release*" paradigm)

- Eruptions powered by free magnetic energy stored in current-carrying (sheared/twisted) magnetic fields (filament channels)
- Free energy slowly accumulated over days/weeks (flux emergence & surface flows)
- Pre-eruptive structure in stable magnetic equilibrium; stabilized by "strapping field"
- Eruption occurs when this balance cannot be maintained (e.g., by exceeding some threshold)



Schrijver *et al.* (2008)

Nice review for "beginners": T.G. Forbes, JGR 105, 23153 (2000)

## Open questions (a long-lasting debate...)

- How are pre-eruptive configurations (filament channels) formed?
- What is their magnetic nature before an eruption?  
(**SMA** or **MFR**?)
- What is the physical mechanism(s) that initiate/drive eruptions?  
(**Reconnection** or **Instability**?)

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please submit only questions related to the above topics!