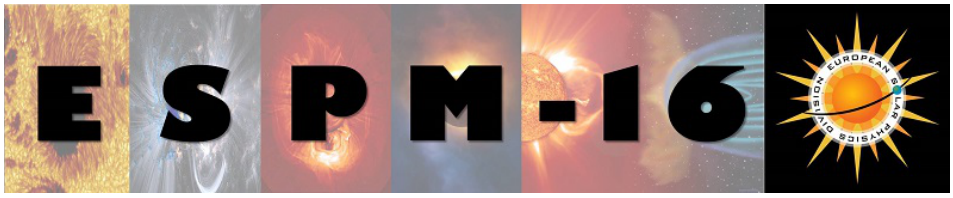

Contribution ID: **199** Type: **Poster**

A Mechanism Driving Recurrent Eruptive Activity on the Sun

Tuesday, 7 September 2021 09:00 (13 minutes)

Active Regions (ARs) in their emergence phase are known to be more flare productive and eruptive than ARs in their decay phase. In this work, we focus on complex emerging ARs composed of multiple bipoles. Due to the compact clustering of the different emerging bipoles within such complex multipolar ARs, collision and shearing between opposite non-conjugated polarities produce "collisional polarity inversion lines"(cPILs) and drive rapid photospheric cancellation of magnetic flux. The strength and the duration of the collision, shearing, and cancellation are defined by the natural separation of the conjugated polarities during the emergence phase of each bipole in the AR. This mechanism is called "collisional shearing". In Chintzoglou et al (2019), collisional shearing was demonstrated using two emerging flare- and CME-productive ARs (NOAA AR11158 and AR12017) by measuring significant amounts of magnetic flux canceling at the cPIL. This finding supported the formation and energization of magnetic flux ropes before their eruption as CMEs and the associated flare activity.

Here, we provide results from data-driven 3D modeling of the coronal magnetic field, capturing the recurrent formation and eruption of energized structures in support of the collisional shearing process. We discuss our results in relation to flare and eruptive activity.

Student poster?

Primary authors: Dr CHINTZOGLOU, Georgios (Lockheed Martin Solar & Astrophysics Lab); Dr CHEUNG, Mark (Lockheed Martin Solar & Astrophysics Lab)

Presenter: Dr CHINTZOGLOU, Georgios (Lockheed Martin Solar & Astrophysics Lab)

Session Classification: Poster Session 3.2

Track Classification: Session 2 - The Solar Atmosphere: Heating, Dynamics and Coupling