Contribution ID: **522** Type: **Poster**

Helicity generation and sign reversal above an Active Region

Wednesday, 8 September 2021 10:18 (13 minutes)

The magnetic and current helicity of the field above active regions is thought to play a role when estimating the probability for coronal mass ejections or strong reconnection events. A deeper understanding of the mechanisms generating the helicity in the corona can be obtained with the help of observationally driven models, in particular magneto-hydrodynamic and ambipolar-diffusion simulations. We aim to study where the helicity may decouple from the Sun to be ejected into inter-planetary space. While the handedness of the helicity in the heliosphere was observed to be exactly reversed as in the solar interior, we expect to find the required sign reversal in the helicity somewhere in between. We employ large magneto-hydrodynamic model to investigate the actual helicity above a really observed active region. In addition, we set up small artificial sunspot groups to observe which handedness of helicity is generated due to the geometric configuration and magnetic polarity of the spots. This leads us to a quasi-scalar formulation for the generated helicity above multipolar sunspot configurations. We find that some configurations create a local helicity in the corona that is opposite to the expected handedness at the solar surface. We conclude that such configurations may be more eruptive than others.

Student poster?

Primary author: BOURDIN, Philippe-A. (University Graz)

Presenter: BOURDIN, Philippe-A. (University Graz)

Session Classification: Poster Session 5.4

Track Classification: Session 3 - Fundamental Plasma Processes in the Solar Atmosphere: Magnetic Reconnection, Waves, Emission, Particle Acceleration