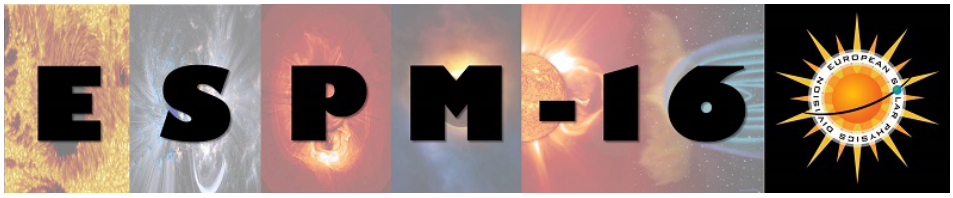

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Polarity relevance in flux rope deflections triggered by coronal holes

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Usually coronal holes (CHs) deviate coronal mass ejections (CMEs) away from them. However, there are some peculiar events reported where the eruption travels towards the CH. To contribute to a space weather forecast efforts, in relation to the prediction of CME trajectories, we study the interaction between flux ropes (FRs) and CHs through numerical simulations. We perform 2.5D numerical simulations where FRs and CHs interact with different relative polarity configurations. The numerical simulations indicate that at low coronal levels, depending on the relative magnetic field polarity between the FR and the CH, the deflection will be attractive, i.e. the FR moves towards the CH (for anti-aligned polarities) or repulsive, i.e. the FR moves away to the CH (for aligned polarities). This is likely due to the formation of vanishing magnetic field regions or null points, located between the FR and the CH or, at the other side of the FR, respectively. We also reconstruct the trajectory and magnetic environment of a peculiar event occurred on 30 April 2012, seen from STEREO spacecrafts.The analysed observational event shows a double-deflection, first departing from the radial direction by approaching the CH and then moving away from it suggesting that the trajectory could result from a magnetic configuration with an anti-aligned polarity. We numerically reproduce the double deflection of the observed event, providing support to this conjecture.

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