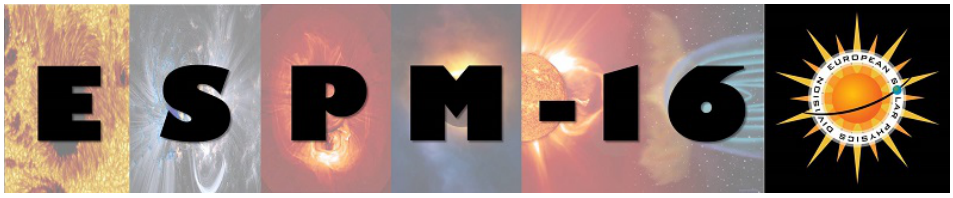

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3D CME reconstruction model comparison: GCS vs. StereoCAT

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For forecasting the arrival of coronal mass ejections (CMEs) at Earth, heliospheric 3D models such as EUHFORIA (EUropean Heliospheric FORcasting Information Asset) [Pomoell and Poedts,2018] rely on the correct observational input of the initial, near-Sun CME parameters (e.g. latitude, longitude, velocity, angular width, etc). The input parameters can be obtained by fitting the structure of the CME while it is still close to the Sun (up to 21.5 solar radii) by using different reconstruction methods such as the Stereo CME Analysis Tool (StereoCAT) and the Graduated Cylindrical Shell (GCS).

The StereoCAT online tool calculates the 3D kinematic properties of CMEs by triangulating their features based on up to three different coronagraph fields-of-view under the assumption that CMEs present a circular cross-section and maintain a constant angular width during their radial expansion, the so-called "cone model" [Millward,2013].

On the other hand, the GCS model [Thernisien,2011], consists of two cones that represent the "legs", attached to the ends of a tubular section, together forming the main body. Like StereoCAT, this tool relies on two different white-light coronagraph fields-of-view for the fitting of the CME shape with no description for the inside structure.

In this study, 19 Earth-directed CME events were selected and their kinematic parameters were calculated using both StereoCat and GCS tools. The aim of this work is to compare the CME properties obtained by both methods and understand how their potential differences lead to different modeling results at Earth when we propagate the CME structures with EUHFORIA.

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