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Study of halo coronal mass ejections using the CORSET method

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Mesquita, Amanda Lucia; Braga, Carlos Roberto; Dal Lago, Alisson

Coronal Mass Ejections (CMEs) are large structures constituted of plasma and magnetic field that are expelled by the Sun into the heliosphere. CMEs pointing along the Sun-Earth line, called halo CMEs, are the main cause of geomagnetic storms. We select a set of 31 halo CMEs from April of 2001 until December of 2015. We used a computational algorithm called CORonal Segmentation Technique (CORSET) to track the CME and calculate the kinematic parameters, such as radial and lateral expansion speeds. From the results of the 31 events we obtained an empirical relation between the radial and the lateral expansion speeds, described by the expression $V_{\text{rad}}=0.78 V_{\text{exp}}$.

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