Numerical Simulation of a Coronal Mass Ejection in the Lower Corona: Comparison of Two Initiation Models ()

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Coronal mass ejections (CME), eruptions of plasma and embedded magnetic field from the Sun's corona into interplanetary space, are the most energetic events on the Sun. The exact processes involved in the release of CMEs are not known. In order to understand them and how they affect the environment around Earth we need to comprehend their eruption, development and propagation through the interplanetary space. In this work, we present a simulation of a CME event occurred during the solar minimum. This simulation was performed using the Space Weather Modeling Framework (SWMF). Within this model, after generating a global steady state of the solar corona, for CR1922, we drive a CME to erupt using two different initiation models presented in the literature; Gibson and Low (1998) and Titov and Démoulin (1999). The ejections, that were followed up to distances of 10 R\sun, reached maximum speeds of 800-1000 km s-1. We discuss these two CME initiation models establishing a comparative analysis of their characteristics and how the initiation process changes the evolution of a simulated CME.

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