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SIGNATURES OF TWO DISTINCT INITIATION MECHANISMS WHILE CMEs EVOLVE IN THE LOWER CORONA

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We present a comparison of a three-dimensional (3D) simulation of coronal mass ejections (CMEs) formed with two different initiation mechanisms: Gibson & Low (1998) (as GL98 from now on) and Titov & Démoulin (1999) (as TD99 from now on). Mainly we aim to compare how the CME magnetic configuration changes during their propagation in the lower corona, until $6R_S$. The simulations are performed using the Space Weather Modeling Framework (SWMF) during the solar minimum (CR1922). We found that both CME-driven shocks are quasi-parallel at the nose and that GL98 presents a higher shock acceleration ($\sim$150 m/ s^{2}versus $\sim$100 m/ s^2) and a higher Mach number, suggesting it would accelerate particles more efficiently. Both initiation mechanisms also presented a post-shock compression for R>$3R_S$, being slightly larger in TD99. They presented also a similar sheath width that increases while propagating away from the Sun (larger in GL98 case). We also found that in GL98 case the CME is driven by a combination of magnetic and thermal pressure, while in TD99 case the thermal pressure dominates its evolution. GL98 presents a sheath mass 20% larger than TD99, a possible explanation for the presence of higher force values for GL98. This paper intends to serve as a prototype for future comparisons of CME evolution, in the lower corona.