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Evolution of solar coronal mass ejections in the low corona

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Coronal mass ejections (CMEs) are a major source of Sun-Earth interactions caused by the ejection of a current-carrying magnetic field in the solar corona. The impact of the CME on the Earth's magnetosphere depends in parts on the orientation of the CME magnetic field with regard to that of Earth. Several mechanisms can modify the CME magnetic properties during its Sun-to-Earth propagation, thus limiting predictability of the CME geo-effectivity. In this poster, we present early results of a project that aims at better understanding the evolution of the magnetic field of a CME during its propagation to Earth. Using numerical magnetohydrodynamics simulations, we focus on the evolution of the CME internal properties, i.e. magnetic field orientation, electric current distribution, and magnetic helicity, during its early development in the low solar corona. The results of this work will be used in preparation for the analysis of in-situ and remote sensing measurements from the Solar Orbiter and Parker Solar Probe missions.