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FRi3D: A Novel 3D Model of CMEs (prototype)

Alexey Isavnin
University of Helsinki, Department of Physics, Helsinki, Finland (alexey.isavnin@helsinki.fi)

Currently, there is no 3D model of a CME that describes its magnetic field configuration and accounts for all major deformations it can experience in the interplanetary space. To improve our understanding of CME evolution in the heliosphere and reliability of space weather forecasts all these aspects have to be taken simultaneously into account. We present the first prototype of the FRi3D (Flux Rope in 3D) model that encapsulates magnetic configuration of a CME in 3D and unifies all key elements of its evolution: expansion, deflections, rotation, front flattening, "pancaking" and skewing. As such, the model is able to describe both white-light and in-situ observations of CMEs.