3DCOREweb: Reconstruct CMEs using the "3D Coronal Rope Ejection Model"
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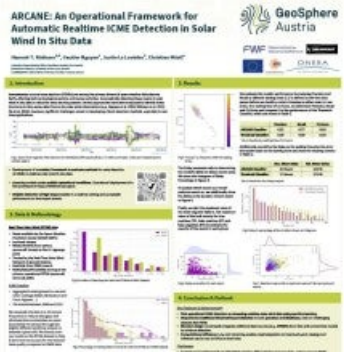
Poster
The 3D coronal rope ejection (3DCORE) model has proven its ability to fit insitu magnetic fields of CME flux ropes. The model assumes an empirically motivated torus-like flux rope structure that expands self-similarly within the heliosphere, is influenced by a simplified interaction with the solar wind environment, and carries along an embedded analytical magnetic field. For the fitting part an approximate Bayesian computation sequential Monte Carlo algorithm is utilized, which allows us to generate estimates on the uncertainty of model parameters using only a single in situ observation.

We present the 3DCOREweb, a graphical user interface that allows straight-forward numerical fitting, generation of synthetic flux rope signatures, comparison of the fitted model to observations and analysis of the obtained results. The application can be used to quickly determine physical parameters of an event, advancing research on the global magnetic structure of CMEs.

Ongoing development aims to extend 3DCOREweb's capabilities by integrating image data into the manual fitting process. This enhancement will enable real-time CME analysis and prediction, leveraging data from missions like PUNCH to provide deeper insights into CME dynamics.



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