

Project Details

ROSES ID: NRA-NNH04ZSS001N

Selection Year: 2005

Program Element: Focused Science Topic

Topic: To determine the solar origins of the plasma and magnetic flux observed in an Interplanetary Coronal Mass Ejection.

Project Title:

Near-real-time Characterization of CMEs using Multi-view White Light Solar Observations

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Project Member(s):

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Summary:

We propose to develop methods for utilizing multi-view white light observations of the solar corona to determine in near real time the gross properties of CMEs, such as the heliographic centerline, velocity, and geometric shape and extent. The results will address both research and forecast needs within the space physics and space weather communities. While the study will make use of the prospective STEREO coronagraph data streams as model input, it will entail comprehensive forward modeling having broad applicability, including for future missions with out-of-the-ecliptic components. The best available descriptions of coronal backgrounds, Zodiacal light, and instrumental noise will be utilized in simulations of CME total intensity and polarization signals. The approach incorporates recent advances in two techniques, one using geometric triangulation upon the periphery of the CME, the other involving analysis of the polarized components of the white light emission. Both methods will be developed in conjunction to produce practical tools for tracking CMEs in the corona. The methods constructed in this work will complement tomographic and other approaches currently under study.

Publication References:

Summary: no summary

Reference: de Koning, Curt A.; Pizzo, V. J.; Biesecker, D. A.; (2009), Geometric Localization of CMEs in 3D Space Using STEREO Beacon Data: First Results, Solar Physics, Volume 256, Issue 1-2, pp. 167-181, doi: 10.1007/s11207-009-9344-7