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Poster
We describe the energy budget of a coronal mass ejection observed on 1999 May 17 with high resolution spectra from the SOHO/UVCS instrument. We constrain the physical properties of the CME's prominence core material as a function of time using observations taken at heliocentric distances of 2.6 and 3.1 solar radii. We use plasma diagnostics from intensity ratios, such as the O VI doublet, to infer the velocity, density, and temperature of the core material. We perform non-equilibrium ionization calculations to infer the ionization states and focus primarily on H I, O VI, and C III. Using these observationally constrained physical properties, we deduce the initial conditions of the CME with respect to the various plasma heating parameterizations we investigated. Amongst the three ions we accounted for, we find that velocities are around 250 km/s at the two observed coronal heights, that cumulative heating energies are less than or equal to the kinetic energies, and that a three-dimensional self-similar expansion does not agree with the observations of this core material.
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