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CME plasma diagnostics using Metis coronagraph

We have derived the physical parameters of a bright eruptive prominence detected in the core of a CME by using simultaneous SoHO/Metis hydrogen $L\alpha$ and VL images for the whole FoV. Our analysis is focused on the event observed on April 25-26, 2021. With triangulation method the de-projected height and velocity of the structure was determined. By analyzing the VL polarization, we have estimated the contribution of the He-D₃ line to the VL channel. We developed a diagnostic tool based on a 2D non-LTE radiative transfer code which can be used for optically thin and thick fast-moving structures. By analyzing the observed $L\alpha$ intensity and derived electron column density we can estimate the electron density and the effective thickness of the prominence plasma at a given uniform temperature. The temperature was constrained by our numerical simulations.

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