
Mapping of prominence plasma parameters from eclipse observations

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Abstract

We construct the maps of quiescent-prominence temperatures, electron densities and geometrical thicknesses. For this we use the RGB signal of prominence white-light emission detected during the total solar eclipse on August 1, 2008 in Mongolia and co-temporal H α spectra taken at Ondřejov observatory. The method of disentangling the electron density and geometrical (effective) thickness was described by Jejčič and Heinzel (2009) and is used here for the first time to analyze the spatial variations of prominence parameters. The electron density is increasing towards the bottom of the prominence which we explain by an enhanced photoionization due to the incident solar radiation. To confirm this, we construct 2D radiative-transfer model with realistic prominence illumination.

Keywords: Eclipse Observations: Prominences: Spectral Line: Intensity and diagnostic

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