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# Kappa-distributions and the Temperature Structure of the Prominence-Corona Transition Region

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## Abstract

A strong gradient of temperature and density in the prominence-corona transition region (PCTR) can form the non-Maxwellian electron distribution with an enhanced number of particles in the high energy tail – the kappa distribution. We have investigated the influence of these kappa-distributions on DEM of PCTR derived from observed line intensities. Generally, the kappa distributions influence both the ionization and excitation equilibrium. The ionization peaks are wider and shifted in the comparison with the Maxwellian distribution. Important consequence of kappa-distribution presence is formation of the emission lines in much wider temperature ranges. This behavior influences also the shapes of DEM. They are flatter than for the Maxwellian distribution. The line contribution functions and emission in AIA bands were calculated for the kappa-distributions in PCTR. The implications for formation temperature of observed AIA band emissions are discussed.

**Keywords:** prominence corona transition region, DEM, kappa distributions

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