

Non-Maxwellian line profiles in transition-region loops observed by IRIS

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We report on the Interface Region Imaging Spectrograph (IRIS) observations of strong Si IV, O IV, and S IV lines produced by bright transition-region loops. All five transition-region lines show similar profiles with significant wings, which can be fitted either with double Gaussians or a kappa-distribution. The fit with a kappa-distribution however produces a better match, especially for the strongest Si IV line. We find very low values of kappa, about 2, in majority of pixels where the line profiles have only one component and are sufficiently symmetric for fitting. All five spectral lines observed have the same FWHM; even if significant non-thermal broadening component is present. The relative intensities of the intercombination O IV and S IV lines relative to the allowed Si IV 1402.8 Å transition can also be fitted with an electron distribution having the same value of $\kappa=2$.