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Fe XVII and the κ -distributions: the line intensities and diagnostics

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Abstract. The intensities of the spectral lines in the solar corona can be affected by presence of the non-thermal distributions. We have looked for the EUV lines of Fe ions in the spectral range corresponding to the EIS detectors which allow us to diagnose the κ -distributions. We have find that the ratios of Fe XVII lines in the EIS spectral ranges have no sensitivity to electron density what gives the best opportunity for diagnostics for this ion. A set of synthetic spectra for different values of the parameter κ of non-thermal κ -distribution, electron density and the mean energy of distribution have been computed. The line ratios with the best sensitivity to the shape of the distribution function have been selected and diagnostics of the parameter κ has been proposed. The possibilities to diagnose the κ -distributions from EIS observations are discussed.