

**Detailed versus statistical approaches for spectral opacity calculations: study of LTE iron plasmas**

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The opacity code SCAALP [1,2] allows detailed and statistical treatments of bound bound transitions where the detailed line term accounting is performed in pure jj coupling. This code is used here to calculate iron opacities assuming local thermodynamic equilibrium. Detailed and statistical calculations are performed for densities between  $10^{-5}$  and  $10^{-3}$  g cm $^{-3}$  and for temperatures between 20 and 100 eV. In this thermodynamic regime, the *Rosseland* mean opacity is always significantly smaller when detailed line accounting approach is used in place of the statistical one. *Rosseland* and *Planck* mean opacities are presented and compared to other opacity codes. Spectral opacities are also presented. The impact of precise atomic data and the limits of statistical treatment are discussed.

[1] G. Faussurier, C. Blancard and E. Berthier, *Phys. Rev. E*, **63**, 026401 (2001)

[2] P. Renaudin *et al.*, *JQSRT*, **79**, 511 (2006)