

The Non-Local Thermodynamical Equilibrium Effects on Opacity

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Abstract: Based on the detailed configuration accounting (DCA) model, a method is developed to include the resonant photoionization and the excitation-autoionization in the non-local thermodynamical equilibrium (NLTE) average atom (AA) model. Using this new model, the mean charge states and the opacity are calculated for NLTE high-Z plasmas and compared with other results. The agreement with AA model is poor at low electron density. The present results agree well with those of DCA model within 10%. The calculations show that the NLTE effects on opacity are strong.

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Key words: non-local thermodynamical equilibrium, average atom model, opacity

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