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Electron impact excitation of oxygen to a metastable state

HARI P. SAHA, University of Central Florida, Orlando, SWARAJ TAYAL, Clark-Atlanta University, Atlanta — The recently extended MCHF method for multi-open channels[1] is applied to the excitation of oxygen from the ground $2p^4$ (^3P) to the metastable $2p^3 3s$ (^5S) state. This method solves coupled integro-differential equations for the excited bound channels and the number of open channels to obtain linearly independent solutions. The electron correlation and polarization effects which are very important, have been taken into account completely ab-initio by the extended MCHF method. The R-matrix method is also used to calculate the same in order to compare with the MCHF results. We will present the comparison of both MCHF and R-matrix results with the available experimental and other theoretical calculations. These results will be useful for astrophysical applications.

[1] H.P. Saha and D.J. Murray, J.Phys. B **38** 3015 (2005).

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