

Abstract Submitted
for the DAMOP11 Meeting of
The American Physical Society

Cross Sections for Electron Scattering from Singly Ionized Nitrogen¹ SWARAJ TAYAL, Clark Atlanta University — The improved atomic calculations for electron impact excitation cross sections for the astrophysically important lines in N II are reported. The collision calculations have been performed in the close-coupling approximation using the B-spline Breit-Pauli R-matrix method. The flexible non-orthogonal sets of spectroscopic and correlation orbitals are employed for an accurate representation of the target states and scattering functions. The close-coupling expansion included 58 bound levels of the $2s^22p^2$, $2s2p^3$, $2s^22p3s$, $2s^22p3p$, $2s^22p3d$, $2s^22p4s$, $2s^22p4p$, and $2s2p^23s$ configurations. The relativistic effects have been included through mass, Darwin, and spin-orbit operators in the Breit-Pauli Hamiltonian. The calculated excitation energies are in excellent agreement with experiment. The present results of cross sections are compared with available other close-coupling calculations.

¹This research is supported by NASA under grant NNG09AB63G from the Planetary Atmospheres Program.

Swaraj Tayal
Clark Atlanta University

Date submitted: 31 Jan 2011

Electronic form version 1.4