

Abstract Submitted  
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**Electron Impact Excitation of Molecular Nitrogen: Excitation of the  $C^3\Pi_u$ ,  $E^3\Sigma_g^+$ , and  $a''^1\Sigma_g^+$  States and Vibrationally-Resolved Excitation of the  $C^3\Pi_u(\nu')$  State**<sup>1</sup> C.P. MALONE<sup>2</sup>, P.V. JOHNSON, J.A. YOUNG, I. KANIK, Jet Propulsion Laboratory, Caltech, MS 183-601, 4800 Oak Grove Drive, Pasadena, CA 91109 USA, S. RAHMAN, UCLA, B. AJDARI, M.A. KHAKOO, Physics Department, Cal State Fullerton, 800 N. State College, Fullerton, CA 92834 USA — Differential cross sections (DCSs) were investigated for electron impact excitation of the  $C^3\Pi_u$ ,  $E^3\Sigma_g^+$ , and  $a''^1\Sigma_g^+$  states from the ground state in  $N_2$ . The DCSs were obtained from new measurements of energy-loss spectra in the region of 10.75eV to 12.75eV measured at incident energies between 13eV and 100eV and for scattering angles ranging from  $5^\circ$  to  $130^\circ$ . Vibrationally-resolved DCSs are presented for electron impact excitation from the ground state to the  $C^3\Pi_u(\nu')$  state, where  $\nu'=0, 1, 2, 3$ , and 4. Relative excitation probabilities for the vibrational levels of the  $C^3\Pi_u$  state are shown to demonstrate non-Franck-Condon behavior for excitation energies less than approximately 50eV.

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