

Abstract Submitted
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Near-Threshold Electron Impact Excitation of Molecular Nitrogen CHARLES P. MALONE, PAUL V. JOHNSON, JEFFREY D. HEIN, Jet Propulsion Laboratory, BRANDON GRISANTI, MURTADHA A. KHAKOO, California State University Fullerton — We present electron energy-loss (EEL) derived excitation cross sections for near-threshold electron impact of N_2 . Differential cross sections (DCSs) and integral cross sections (ICSs) were obtained by unfolding EEL spectra in the $\sim 6 - 11\text{eV}$ range for the $A\ ^3\Sigma_u^+$, $B\ ^3\Pi_g$, $W\ ^3\Delta_u$, $B'\ ^3\Sigma_u^-$, $a'\ ^1\Sigma_u^-$, $a\ ^1\Pi_g$, and $w\ ^1\Delta_u$ electronic states over the $\sim 0 - 130^\circ$ scattering angular range. Vibrationally-resolved DCSs and ICSs were obtained for stronger vibronic transitions, including the $a\ ^1\Pi_g$ state, which generates the atmospherically important Lyman-Birge-Hopfield (LBH) emissions. The summed near-threshold excitation cross sections ($A+\dots+w$) generally are larger than previous measurements.

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