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Vibrational change by electron collision<sup>1</sup> STEVEN GUBERMAN, Institute for Scientific Research — The vibrational change in molecular ions due to collisions with electrons can be a fast process. This has not been generally recognized until relatively recently. For a high rate constant, the process requires a resonance state intermediate that is either vibrationally quasidiscrete or continuous. These highly excited states are common at energies just above the neutral ionization potential. The ab initio calculation of vibrational change rate constants is reported for N2+, i.e. N2+(v) + e  $\rightarrow$  N2+(v') + e. The calculations utilize accurate potential curves, electronic widths and the MQDT approach for the calculation of cross sections and rate constants. The rate constants are found to be comparable to those for dissociative recombination. Rate constants over a wide electron temperature range for the lowest 5 ion vibrational levels will be reported.

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