Abstract Submitted
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Vibrationally-resolved Charge Transfer for Proton Collisions with CO[1] CHIH-YUAN LIN, PHILLIP STANCIL, University of Georgia, Y. LI, J.P. GU, H.P. LIEBERMANN, ROBERT BUENKER, University of Wuppertal , MINEO KIMURA, Kyushu University — Electron capture by protons following collisions with carbon monoxide, and the reverse process, is studied with a quantal molecular-orbital coupled-channel method utilizing the infinite order sudden approximation for collision energies between 0.5 and 1000 eV/u. The potential surfaces and couplings, computed with the multireference single- and double-excitation (MRD-CI) method for a range of H^+-CO orientation angles and C-O separations, are adopted in the scattering calculations. Results including vibrationally-resolved and orientation-angle- dependent cross sections are presented for a range of CO and CO^+ vibrational levels. Comparison with experiment is made where possible and the relevance of the reaction in astrophysics and atmospheric physics is discussed.

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