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Rotational Quenching of CO by collision with H_2 BENHUI YANG, P. STANCIL, The University of Georgia, N. BALAKRISHNAN, The University of Nevada Las Vegas, R. FORREY, Penn State University, Berks-Lehigh Valley College — Collisions of CO with H_2 have been the subject of numerous experimental and theoretical investigations, due in part, to their high abundance in a wide range of astronomical environments. We present quantum mechanical scattering calculations for the rotational relaxation of CO in collisions with para- and ortho-H_2 using the quantum close-coupling and coupled states approaches. State-to-state cross sections for the pure rotational quenching of the j=1, 2, $\cdots$, 10 levels of CO were computed using the new H_2-CO potential surface of Jankowski and Szalewicz (JS, 2005). The results are compared to previous calculations and to cross sections obtained with the 1998 potential of JS. Rate coefficients for astrophysically relevant temperatures, as well as in the ultracold regime, are also obtained. We acknowledge support from NASA grant NNG04GM59G.

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