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Reactive scattering calculations for D + H_2 in vibrationally excited states at ultralow temperature ION SIMBOTIN, ROBIN CÔTÉ, University of Connecticut, Department of Physics, Storrs, CT 06269. — We calculate total cross sections for the D + $H_2(v, j=0)$ collision, and investigate their dependence on the vibrational quantum number v of the initial state of H_2. The cross sections increase quasi-exponentially with the excitation energy of the initial vibrational state. This is similar to the exponential dependence observed in the vibrational predissociation of van der Waals complexes. We attempt to explain this simple relationship in terms of the short range details of the single channel atom–molecule wavefunctions and the couplings between the initial and final channels.

Robin Côté
University of Connecticut, Storrs, CT 06269

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