Feshbach Resonances in the Inelastic Collision $\mathbf{B}(^2\mathbf{P}_{1/2})$ + $\mathbf{H}_2(j)$ $\leftrightarrow$ $\mathbf{B}(^2\mathbf{P}_{3/2})$ + $\mathbf{H}_2(j')$ DAVID WEEKS, THOMAS NIDAY, Air Force Institute of Technology — Feshbach resonances can occur during an inelastic collision when wave packet amplitude propagating on a lower potential energy surface is non-adiabatically coupled to an upper potential energy surface (1). If the upper potential energy surface exhibits a well, then components of the incoming wave packet with energies near the quasi-bound eigenvalues of the upper well can become trapped. Eventually, the trapped wave packet amplitude will exit the interaction region and give rise to sharply peaked resonant structure in the scattering matrix elements that characterize the collision. Using the wave packet based Channel Packet Method, we calculate scattering matrix elements for the inelastic $B(^2P_{1/2})$ + $H_2(j)$ $\leftrightarrow B(^2P_{3/2})$ + $H_2(j')$ collision (2). Sharp resonance features in the scattering matrix elements are observed to occur at energies that are in close agreement with numerical calculations of adiabatic vibrational eigenvalues of the weakly bound B...H_2 van der Waals complex. (1) M.S. Child, Molecular Collision Theory, Dover Publications, Mineola NY, (1996). (2) D.E. Weeks, T.A. Niday, and S.H. Yang, J. Chem. Phys, 125, 164301 (2006).

David Weeks
Air Force Institute of Technology

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