

Abstract Submitted
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Investigation of Charge Transfer in Low Energy D_2^+ + H Collisions using Merged Beams¹ V.M. ANDRIANARIJAONA, J.J. RADA, Pacific Union College, Angwin, California, 94508, R. REJOUR, C.C. HAVENER, Oak Ridge National Lab, Oak Ridge, TN 37831-6372 — The hydrogen - hydrogen(deuterium) molecular ion is the most fundamental ion-molecule two-electron system. Charge transfer proceeds through dynamically coupled electronic, vibrational and rotational degrees of freedom. Using the ion-atom merged-beams apparatus at Oak Ridge National Lab we have measured absolute charge transfer cross sections for D_2^+ + H from keV/u collision energies where the collision is considered “ro-vibrationally frozen” to meV/u energies where collision times are long enough to sample vibrational and rotational modes. The molecular ions are extracted from an ECR ion source with a distribution of ro-vibrational states. The measurements benchmark high energy theory (Errea et al., NIMB 235, 362 (2005) and vibrationally specific adiabatic theory (Krstic PRA 66, 042717 (2002)).

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