

Abstract Submitted
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Probing Dynamic Processes in the Formation of Temporal, Electronic, Vibrational and Rotational Quantum States of Antibonding-Intermediate States of $(H_3^+)^{}$ that Lead to its Three-Body Breakup¹**

D. CALABRESE, Sierra College, D.H. JAECKS, L.M. WIESE, B. JORDON-THADEN, O. YENEN, University of Nebraska-Lincoln — The excitation energy of over 175 states of temporal $(H_3^+)^{**}$ have been determined with 3-5 milli-electron volt resolution, by measuring the center of mass energies of H^+ , H^+ , and H^- resulting from single-dissociation events produced in collisions of 4.0 keV H_3^+ with He. This was achieved by using triple coincidence techniques.[1] We then formed a Linear Dalitz Plot by graphing the fractional center of mass (c.m.) energies of the ions as a function of the total c.m. energy to display and interpret the data.[2] We found that multiple sets of triple coincidence events form patterns in the projectile frame energy interval 4.5 eV to 10eV. This form of graph elucidates many temporal features of the dissociation process that will be presented. [1] Lisa Marie Wiese Ph.D. thesis, University of Nebraska-Lincoln, 1998. [2] B. Jordon Thaden, Ph.D. thesis, University of Nebraska-Lincoln, 2005.

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