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Dissociative Ionization of C_2H_2 by 1MeV/u C^{5+} projectiles J.C. THOMPSON, ALLEN LANDERS, E.J. CLOTHIAUX, Auburn University, J.B. WILLIAMS, J.M. SANDERS, University of South Alabama — We have measured the multiple breakup channels resulting from the interaction between a 1MeV/u C^{5+} projectile ion and acetylene C_2H_2 target using Cold Target Recoil-Ion Momentum Spectroscopy (COLTRIMS). The many observed fragment ion-pairs include [H⁺, H⁺], [H⁺, C²⁺], [H⁺, C⁺], [H⁺, C⁺₂], [H⁺, C₂H⁺], [C⁺, C²⁺], [C²⁺, C³⁺], and [C⁺, C⁺]. Preliminary examination of the two-body [H⁺, C₂H⁺] breakup channel shows an isotropic fragment-momentum distribution, indicating that this dissociation is equally probable for all orientations of the intermolecular axis relative to the projectile beam within the axial recoil approximation. Further investigations, including determination of branching ratios and additional momentum calculations for the other breakup channels are underway.

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