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Collision induced dissociation and dissociative capture of slow (keV) H_2^+ and HD^+ on atomic targets[1] NORA G. JOHNSON, A. MAX SAYLER, LEAH VAN NAHMEN, SAM FAHRENHOLTZ, ELI PARKE, D. HATHIRAMANI, J.W. MASEBERG, K.D. CARNES, I. BEN-ITZHAK, J.R. Macdonald Laboratory, Department of Physics, Kansas State University — Collision induced dissociation [CID, e.g. H_2^+ + Ar (He) → H^++ H + Ar (He)] and dissociative capture [DC, e.g. H_2^+ + Ar (He) → H+ H + Ar^+(He^+)] are measured and separated by 3D momentum imaging of the fragments. CID is further separated into two mechanisms: electronic (eCID) and vibrational (vCID) excitation, distinguished by the kinetic energy release and the momentum transfer to the center of mass of the projectile. Similarly, DC is separated into capture directly to the repulsive $b^3\Sigma_u^+$ state and predissociating $c^3\Pi_u$ state. Angular studies for both channels show vCID strongly prefers to be aligned perpendicularly to the beam direction whereas DC prefers parallel alignment. Our eCID data agrees nicely with theory [1]. [1] Green and Peek, Phys. Rev. **183**, 166 (1969).

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