SEMINAR ANNOUNCEMENT
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Kinematically Complete Study of Dissociative Capture and Coulomb explosion in p + H_2 Collisions Using COLTRIMS

We measured fully differential cross sections (FDCS) for dissociation due to capture and excitation to a repulsive state as well as Coulomb explosion due to double electron capture in p+H_2 collisions. FDCS were analyzed for two molecular orientations (parallel and perpendicular) relative to the momentum transfer in the transverse direction (q_x) as a function of projectile scattering angle (θ_p). For the perpendicular orientation, two-center interference was identified. For the dissociative case, data were obtained for a range of kinetic energy releases (KER) from 5 eV to 11 eV. In this region the $2p\pi_u$ and the $2s\sigma_g$ states mainly contribute to dissociation. The interference pattern observed is consistent with the $2s\sigma_g$ state being dominant at large θ_p while at small θ_p both states contribute significantly. In the double capture case, events with 13 eV $<$ KER $<$ 27 eV were selected. For these events, only one channel (Coulomb explosion) contributes and the KER determines the inter-nuclear separation, so the phase angle should be well determined. Nevertheless, the observed interference pattern is significantly less pronounced than for dissociation.
RSVP to C.J. Martoff (martoff@temple.edu) so we're sure to get a big enough room