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Single Ionization of Molecular Hydrogen by 75 keV Proton Impact K. EGODAPITIYA, A. LAFORGE, J. ALEXANDER, M. SCHULZ, Dept. of Physics, Missouri University of Sci. & Tech., Rolla, MO, A. HASAN, Dept. of Physics, UAE University, Abu Dhabi, United Arab Emirates, M. CIAPPINI, Institute of High Performance Computing, Singapore, M. KHAKOO, Dept. of Physics, California State University, Fullerton, CA — Triply differential cross sections (DDCS) for single ionization of molecular hydrogen by 75keV proton impact have been measured and calculated as a function of the projectile scattering angle, energy loss, and longitudinal recoil momentum. Earlier, we reported interference structures in the DDCS resulting from coherent diffraction of the incoming projectile wave from the two atomic centers in the molecule. In the experimental data these structures disappeared near $v_{el} \approx v_{proj}$. It seems plausible that this disappearance may be caused by the PCI, which is known to maximize at $v_{el} \approx v_{proj}$. In order to test this hypothesis we have measured the recoil-ion momenta in addition to the projectile momenta in a kinematically complete experiment. Indeed, in the TDCS a weak interference structure is recovered if large longitudinal recoil-ion momenta p_z^{rec} are selected, which kinematically suppress PCI. In contrast, for small p_z^{rec}, which kinematically favor PCI, no structure is observed.

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