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Effect of projectile coherence on multiple differential cross sections for 75 keV proton impact on H₂¹ S. SHARMA, K. EGODAPITIYA, D. MADISON, M. SCHULZ, Missouri S&T, Dept. of Physics, Rolla, MO, A. HASAN, UAE University, Dept. of Physics, Abu Dhabi, A. LAFORGE, R. MOSHAMMER, Max-Planck-Institut für Kernphysik, Heidelberg, Germany — Recent results in ion-atom collision experiments suggest that discrepancies between theory and experiment are at least partly due to the representation of incoming projectile by a delocalized wave (coherent treatment). Recently we reported an experiment designed to investigate this. There, DDCS were measured for two different positions of the collimating slit. In one case the width of the proton wave packet was larger than the inter-nuclear separation of a H₂ molecule (coherent case), while in the other it was much smaller than that (incoherent case). The two data sets were clearly different where in the coherent case a Young type interference structure was present and in the incoherent case it was not. Our next effort was to see the effects of projectile coherence on other processes such as single electron capture. Here we discuss the details of such an experiment and the observed results.

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