

Abstract Submitted
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Fully Differential Measurements on Single Ionization of He by 75 keV Proton Impact¹ NATALIYA V. MAYDANYUK, AHMAD HASAN, BRIAN TOOKE, EMILIO NANNI, MICHAEL SCHULZ, Physics Dept., University of Missouri-Rolla — Fully momentum analyzed scattered projectiles and recoil ions in 75 keV p + He collisions were measured in coincidence. The momentum of the ionized electrons was deduced from momentum conservation. We obtained fully differential three-dimensional angular distributions of electrons with an energy of 5.5 eV. Through the use of position sensitive detectors, data were recorded for a broad range of scattering angles simultaneously. According to the first Born approximation, peak structures in the direction of the momentum transfer q (difference between initial and final projectile momentum) and $-q$ were expected (binary and recoil peak). Instead, we observe a peak which is shifted backwards at small scattering angles and forward at large scattering angles relative to q and no significant recoil peak. These observations as well as unexpected features outside the scattering plane are a manifestation of a surprisingly important role of the projectile – target nucleus interaction.

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Michael Schulz
University of Missouri-Rolla

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