

Abstract Submitted
for the GEC19 Meeting of
The American Physical Society

Target Dependence of Post-Collision Effects in Ionization by Proton Impact.¹ MADHAV DHITAL, AARON SILVUS, SUJAN BASTOLA, ESAM ALI, Missouri University of Science and Technology, MARCELO CIAPPINA, ELI PRAGUE, DON MADISON, MICHAEL SCHULZ, Missouri University of Science and Technology — We have measured singly charged recoil ions in coincidence with the momentum analyzed projectiles for ionization of Ne and Ar by 75 keV proton impact. From the data we extracted double differential cross sections (DDCS) for a broad range of fixed projectile energy losses as a function of the projectile scattering angle. Furthermore, the average scattering angle θ_{ave} for a given energy loss were analyzed as a function of the ejected electron to projectile speed ratio v_e/v_p . Along with data obtained previously for H, H₂, and He targets this made possible a systematic analysis of the dependence of post-collision effects on the target. For targets with a relatively small ionization potential I pronounced minima in θ_{ave} were found near $v_e/v_p = 1$, which were absent for targets with large I . This observation seems to suggest a decreasing importance of post-collision effects with increasing I . However, a possible alternative explanation is an increasing role of the repulsive nucleus-nucleus interaction with increasing I , which tends to lead to larger scattering angles. Furthermore, for $v_e/v_p < 1$ θ_{ave} decreases with increasing I , suggesting an increasing role of post-collision effects.

¹Supported by the National Science Foundation under grant no. PHY-1703109

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Date submitted: 04 Jun 2019

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