

Abstract Submitted
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Scattering of H^- by plane and nano-stepped surfaces: Role of the ion speed for probing the surface band structure¹ HIMADRI CHAKRABORTY, Northwest Missouri State University, Maryville, MO 64468, UWE THUMM, Kansas State University, Manhattan, KS 66502 — Resonant charge transfer between ions and metal surfaces is a useful tool to explore the surface electronic structure. Using the Crank-Nicholson propagation method [1] we solve the time-dependent Schroedinger equation to simulate the dynamic electron redistribution during the scattering of a hydrogen anion from plane and nano-stepped metal surfaces. We calculate electronic evolution during the scattering and the final ion survival probability as a function of the projectile's incident angle. We find that the survival of the ion reflected off a plane surface is very sensitive to the component of the projectile speed perpendicular to the surface and analyze rich structure of the survival probability as a function of the perpendicular speed. For the stepped surfaces, conversely, the ion survival is found to depend critically on the ion speed parallel to the surface. [1] Chakraborty et al., *Phys. Rev. A* **70**, 052903 (2004).

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