Abstract Submitted
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Avoided Level Crossing during Ion – Surface Interaction BOGDANA BAHRIM, ARIS MARTINEZ, Physics Department, Lamar University, Beaumont, TX 77710 — We apply the Wave-Packet Propagation method adapted to ion-surface interactions [1] to study negative hydrogen ions scattered from silver surfaces. As the ion projectile approaches the surface, the Projected Density of States (PDOS) shows an avoided crossing between the negative ion energy level and the silver surface state level located inside the band gap at the G point. We show results for the energy of the projectile as a function of the ion-surface distance, as well as a detailed study of the metal surface states and image states involved in the interaction. This work is important for Fundamental Research and has a broad range of technological applications [2, 3], such as in: Aeronautical and Space Engineering, Plasma-Wall Interactions, Film Deposition, Catalysis, Corrosion, and Scanning Tunneling Microscopy. [1] B. Bahrim, J. Stafford, B. Makarenko, Surface and Interface Analysis 50, 212 (2018). [2] R. Goswami, Physics of Plasmas 20, 082516 (2013). [3] P. R. Chalker, Surface and Coating Technology 271, 258 (2016).

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