

Abstract Submitted
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Adsorbates effects in H^- - Na/Cu(111) collisions¹ BOGDANA BAHIRIM, SONG YU, Department of Chemistry and Physics, Lamar University - Texas — The (111) faces of Cu, Ag and Au present a band gap that extends just below the vacuum level at the $\bar{\Gamma}$ gpoint [1]. The effect is to forbid electrons with energies in a certain range to be transferred into the metal along the surface normal. Thus, the presence of a band gap should dramatically influence various experiments in ion-surface collisions involving electron capture or loss. In recent years, this topic received a great interest [2 – 4]. Adsorbates deposition makes the electron dynamics at such surfaces to be even more complex. We analyze some interesting adsorbates effects: (1) projectile energy levels and widths are strongly perturbed when this approaches close to an adsorbate atom; (2) scattering by adsorbates may be used to laterally confine surface state electrons; (3) adsorbates may enhance the band gap effect; (4) adsorbates tend to couple the surface states to the bulk states. Results for the H^- projectile interacting with a Na/Cu(111) surface are reported. [1] E.V. Chulkov, V.M. Silkin and P.M. Echenique 1999 *Surf. Sci.* **437**, 330. [2] A.G. Borisov, A.K. Kazansky and J.P. Gauyacq 1999 *Phys. Rev. B.* **59**, 10935. [3] H.S. Chakraborty, T. Niederhausen and U. Thumm 2004 *Phys. Rev. A.* **70**, 052903. [4] B. Bahrim, B. Makarenko and J.W. Rabalais 2005 *Surface Sci.* **594**, 62.

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