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"Step-up" vs. "Step-sown" scattering asymmetry in the charge transfer of H^- on free-electron vicinal metallic surfaces BOYAN OBRESHKOV, UWE THUMM, Dept. of Physics, Kansas State University — We present numerical results based on a wave-packet propagation study of the one-electron charge transfer between H^- ions and free-electron vicinal metallic surfaces [1]. We derive an effective potential for the motion of the active electron within a Thomas-Fermi-von Weizsäcker model and extend this model to include the image charge effects. We first calculate H^- affinity level shift and width in fixed-ion approximation and solve a rate equation for the ion-survival probability for projectiles that are incident with a kinetic energy of 50 eV. We find an enhancement of the electron loss near the steps of the surface, due to the Smoluchowski effect. As a consequence, the ion-survival is more likely if the projectiles approach steps from above than from below [2].

[1] B. Obreshkov and U. Thumm, Phys. Rev. A **74**, 012901 (2006).
[2] B. Obreshkov and U. Thumm, Surf. Sci. **601**, 622 (2007).

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Boyan Obreshkov
obreshko@phys.ksu.edu
Dept. of Physics, Kansas State University

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