

Abstract Submitted
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Chaotic Ionization of Excited Hydrogen Atoms Near a Metal Surface¹ CHRIS CROWE², ROBERT HAUSSMAN³, SHAYNE JOHNSTON, Oklahoma School of Science and Mathematics — A previously published analysis of classical chaos in hydrogen atoms located near a conducting wall [N.S. Simonovic, *At. Mol. Opt. Phys.* 30, L613 (1997)] is extended in two directions. First, a more realistic model for the metal surface potential is used, the potential being finite rather than infinite at the wall. Second, the presence of chaos is investigated by direct numerical evaluation of the electron trajectories rather than indirectly through interpretation of the electron Hamiltonian. A chaotic dependence of the wall capture time on the initial ejection angle from the nucleus is demonstrated under certain conditions, and the critical atom-surface distance for such chaotic ionization to occur is derived.

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