

Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Ionization of Rydberg atoms at metal surfaces¹ DENNIS NEUFELD, YU PU, F. BARRY DUNNING, Rice University — The behavior of Xe(nf) Rydberg atoms at metal surfaces is being explored to probe the response of a Rydberg atom to the presence of a nearby surface and to determine the atom-surface separation at which ionization occurs through resonant tunneling of the excited electron into a vacant level in the metal. Although measurements yield average ionization distances that are in good agreement with theoretical predictions their spread is somewhat larger than expected. A variety of factors that might account for this are being examined. Measurements with different high- n ($n \sim 17-50$) states and incident angles are being used to examine possible effects associated with the evolution of the excited states as the surface is approached. A selection of different surfaces is being employed to elucidate the effects of surface topography and surface potential variations, i.e., patch fields.

¹Research supported by the NSF and Robert A. Welch foundation

Dennis Neufeld
Rice University

Date submitted: 22 Jan 2009

Electronic form version 1.4