

Abstract Submitted
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Potential Barrier Effects in Multiphoton Ionization Processes¹

LIANG-WEN PI, ANTHONY F. STARACE, The University of Nebraska-Lincoln, USA — Potential barriers in the effective radial potential experienced by a photoexcited electron are shown to result in dramatic, resonance-like effects in multiphoton ionization processes. In a multiphoton ionization process, such potential barriers may affect not only the final state of the electron (as in single-photon ionization), but also the intermediate-state electron wave packet at energies in the vicinity of the barrier. Such effects have been demonstrated numerically as a function of frequency [1], confirming an experimentally-observed enhancement in two-photon ionization of Xe at a single frequency [2]. We show here that these effects are general by considering the n -photon cross sections (with $n > 2$) for ionization of Ar and Xe within a single-active-electron, central-potential model.

[1] L.W. Pi and A.F. Starace, Phys. Rev. A **82**, 053414 (2010).

[2] V. Richardson *et al.*, Phys. Rev. Lett. **105**, 013001 (2010).

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