

Language: English

Date : July 31 (Thu), 2014, 15:00–15:40

Location : Cooperation Center, 5F Meeting Room, W524
(研究交流棟5階会議室W524)

Title : First-order corrections in the weak-field asymptotic theory of tunneling ionization by static electric field

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In this work, we study the tunneling ionization of atoms or molecules induced by a static electric field, which is one of fundamental problems in quantum mechanics. The goal is to incorporate the first-order correction terms into the asymptotic expansions of the tunneling rate and transverse momentum distribution. The established formulas are applicable to any target treated in single-active-electron and frozen-nuclei approximations. We also extend the theory to many-electron systems, taking the electron correlation into account. As compared with rigorous numerical calculations, first-order corrections show to enhance the accuracy of the theoretical predictions at a quantitative level, practically valid up to the onset of over-barrier ionization.