

Abstract Submitted
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Rescattering Effects in the High-Frequency Regime¹ N.L. MANAKOV, A.V. FLEGEL, M.V. FROLOV, Voronezh State University, Russia, ANTHONY F. STARACE, University of Nebraska-Lincoln — Characteristic plateau features in the spectra of fundamental strong-field processes (such as high harmonic generation, above-threshold ionization, and laser-assisted electron-atom scattering) are shown to exist for photon energy E_γ of the order of the bound electron energy $|E_0|$. The significance of rescattering effects in such a high-frequency (and thus non-tunnelling) regime is supported by accurate quantum analyses of intense Ti-sapphire laser interactions with halide negative ions (in which case $E_\gamma \approx 0.5|E_0|$). We present a quantum interpretation of rescattering phenomena in the high-frequency regime, in which a multiphoton transition (and not tunneling) is the first step of the rescattering scenario. Our numerical results for the ATD spectrum of F^- support the interpretation of recent experiments [1] in terms of rescattering. [1] J. Pedregosa-Gutierrez et al., Phys. Rev. Lett. **93**, 223001 (2004).

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