Abstract Submitted
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Analytic Description of Laser Assisted Electron Scattering Plateau Spectra for Elliptical Polarization[1] ALEXANDER V. FLEGEL, The University of Nebraska, USA, MIKHAIL V. FROLOV, NIKOLAI L. MANAKOV, Voronezh State University, Voronezh, Russia, ANTHONY F. STARACE, The University of Nebraska, USA — We present an analytic description of laser-assisted electron scattering (LAES) for the case of an elliptically polarized laser field. A closed-form analytic formula describing plateau features in LAES is derived quantum mechanically in the low-frequency limit. This formula provides an analytic explanation for the oscillatory patterns of LAES cross sections in the high-energy part of the LAES spectra. This formula generalizes the result for a linearly polarized laser field presented in [1] to the case of elliptical polarization and confirms the possibility of factorizing the LAES cross section into the product of two atomic factors involving the field-free cross sections for elastic electron-atom scattering and a factor (insensitive to atomic parameters) describing the elliptically polarized laser-driven motion of the electron. These results provide a fully quantum justification of the classical rescattering scenario for LAES in an elliptically polarized laser field.

[1] A. V. Flegel *at al.* J. Phys. B **42**, 241002 (2009).

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