

Strong-field physics driven by quantum light

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Various extreme nonlinear phenomena can arise when matter is illuminated by bright light, including high harmonic generation, above threshold ionization and more. Until recently, such processes were driven by laser pulses that are well described by classical electromagnetic fields.

I will present our investigations on high harmonic generation and ultrafast electronic motion driven by quantum light [1-3]. Topics include: i) Generalization of the pondermotive potential and electronic Volkov state to quantum light ii) Generation of squeezed high-order harmonics iii) quantum state tomography of attosecond pulses and iv) selection rules of high harmonic generation driven by quantum light.

References

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- [2] A. Gorlach, M. Even Tzur, M. Birk, M. Kruger, N. Rivera, O. Cohen and I. Kaminer, High harmonic generation driven by quantum light, *arXiv:2211.03188 (2022)*
- [3] M. Even, Tzur and O. Cohen, Motion of charged particles in bright squeezed vacuum, *arXiv:2305.16831, 2023*