Abstract Submitted
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Intense sub-2 optical cycle laser pulses at 1.8 micron for high harmonic generation FRANCOIS LEGARE, INRS-EMT, BRUNO E. SCHMIDT, INRS-EMT/University of Ottawa, PIERRE BÉJOT, Université de Bourgogne, MATHIEU GIGUÈRE, INRS-EMT, ANDREW D. SHINER, CARLOS TRALLERO-HERRERO, University of Ottawa / NRC Canada, ÉRIC BISSON, INRS-EMT, JEROME KASPARIAN, JEAN-PIERRE WOLF, Universite de Geneve, DAVID M. VILLENEUVE, NRC Canada, JEAN-CLAUDE KIEFFER, INRS-EMT, PAUL B. CORKUM, University of Ottawa / NRC Canada — Shortening of attosecond pulse duration utilizing high harmonic generation (HHG) requires access to few cycle pulses in the infrared spectral range because the cut-off shifts towards higher photon energies proportional to the square of the driving field wavelength. Furthermore, the ability of performing time-resolved molecular orbital tomography of polyatomic molecules will benefit from longer wavelengths compared to 800 nm because of their low ionization potential. A simple scheme for generating 0.4 mJ 11.5 fs pulses at 1.8 μm is presented. Optical parametric amplified pulses were spectrally broadened in a hollow-core fiber and subsequently compressed by utilizing linear propagation through bulk material. The physical origin of the pulse compression scheme will be confirmed with numerical simulations of nonlinear propagation in the hollow-core fiber. Finally, high harmonic generation of noble gas atoms will be reported.

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