

Abstract Submitted
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Effect of Carrier Envelope Phase on Single Shot XUV Supercontinuum Measurements¹ MAHENDRA MAN SHAKYA, S. GILBERTSON, C. NAKAMURA, C.Q. LI, E. MOON, Z. DUAN, J. TACKETT, S. GHIMIRE, ZENGHU CHANG, J.R. Macdonald Laboratory, Kansas State University, Manhattan KS 66506 — High order harmonic generation in argon gas was made with polarization gated ~ 6 fs laser pulses. Phase matching of the harmonic field was then investigated by changing the gas pressure in a gas cell which had two holes on its wall drilled by the laser beam itself. The highest number of photons of a single XUV pulse was on the order of 10^4 . A glancing incident grating spectrometer with a MCP imager was integrated into the high harmonic generation setup to measure the XUV spectrum. By having the half divergence angle of the XUV beam (3.5 mrad) matched with the acceptance angle of the grating, the throughput of the spectrometer has been maximized. The XUV flux is sufficient for measuring the single shot XUV spectrum in the 35-60 eV photon energy range. The spectral profiles showed a supercontinuum for some shots and discrete harmonic peaks for the other shots. This shot to shot variation in the spectral profiles is attributed to a result of the changes of carrier envelope phase of the few-cycle laser pulses used for the polarization gating.

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