

# Temporal Characterization of Isolated Attosecond Pulse Generated with Double Optical Gating<sup>1</sup>

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Double optical gating (DOG) was demonstrated for producing isolated attosecond pulses from multi-cycle driving lasers. It combines the two-color and the polarization gating. The generated supercontinuum spectrum extends from 28 eV to 620 eV including the “water window” region and supports single 16 as pulses, below one atomic unit of time (24 as). XUV pulses with 136 as duration were generated from 9 fs lasers and 260 as from 20 fs driving lasers in argon gas. The pulse shape and phase were characterized by FROG-CRAB based on attosecond streaking. Also, we have used the isolated attosecond pulses generated with DOG in several applications. Since DOG greatly reduces the requirements on the driving laser pulse duration, we found this technique is easy to implement and delivers daily reproducible attosecond pulses.

<sup>1</sup>This work is supported by the U. S. Army Research Office under Grant No. W911NF-07-1-0475, and by the Chemical Sciences, Geosciences, and Biosciences Division, U.S. Department of Energy.