

Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Optical Field Shaping with Broadband Coherent Raman Generation¹ ALEXEI SOKOLOV, KAI WANG, MIAOCHAN ZHI, AYSAN BAHARI, MARIIA SHUTOVA, ALEXANDRA ZHDANOVA, Texas AM University — We work toward developing a novel light source capable of producing sub-cycle optical waveforms with prescribed temporal and spatial shapes. Our Raman-based technique utilizes highly coherent molecular motion to modulate light and produce a broadband spectrum of mutually coherent sidebands. The total bandwidth of our source spans infrared, visible, and ultraviolet spectral regions, generating bursts of light synchronized with respect to molecular oscillations. Controlled spectral and temporal shaping of the resultant waveform allows arbitrary ultrafast, potentially non-sinusoidal, field synthesis. Our use of spatial light modulators to shape the transverse beam profiles adds another dimension to the laser field engineering. These are steps toward production of space- and time-tailored sub-cycle optical fields.

¹This work is supported by the National Science Foundation (grant No. PHY-1307153) and the Welch Foundation (grant No. A-1547).

Alexei Sokolov
Texas A
M University

Date submitted: 29 Jan 2016

Electronic form version 1.4