

# Generation and control of single-cycle mid-infrared waveforms

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We demonstrate sub-7-fs pulses derived from a carrier-envelope-phase-stabilized Cr:ZnS mode-locked laser. These pulses drive cascaded intra-pulse difference-frequency mixing in a ZGP crystal, leading to multi-octave (0.9 - 12  $\mu\text{m}$ ) coherent pulse synthesis. The resultant single-cycle mid-infrared wave-forms can be shaped by varying the CEP of the driving pulses.

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