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FROG Simulations of Femtosecond Laser Double-Pulses Affected by Different Orders of Dispersion[1] MILAN TOMIN, SOROUSH KHOSRAVI, MARCO SCIPIONI, Queens University of Charlotte, GEORGE GIBSON, University of Connecticut, QUEENS UNIVERSITY PHYSICS DEPARTMENT COLLABORATION, GEORGE GIBSON ULTRAFAST PHYSICS LAB COLLABORATION
— This poster presentation reports the simulation analysis and results of FROG (Frequency-Resolved Optical Gating) traces for femtosecond laser double-pulses with different orders of dispersion. Particularly, double pulses with second, third, or fourth order dispersion were examined. The simulated double-pulses were created by splitting a transformlimited pulse (center frequency=800nm, bandwidth =25 nm, and pulse duration= 40 fs) into two slices in the frequency domain. While FROG traces for the case of a single laser pulse have already been simulated by different authors in an earlier work, the simulation results in this poster are novel since they represent the first FROG simulations for femtosecond laser double-pulses. This research work, which was initially conducted to characterize the output of a high energy femtosecond double-pulse stretcher, can be generalized and implemented to other instruments such as double-pulse noncolinear optical parametric amplifiers (NOPAs). Additionally, the presented simulation results and analysis could be useful in the context of applications requiring precise phase control of doublepulses, such as Raman chirped adiabatic passage (RCAP).

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