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Using Multiple FROG Traces to Generate a Single High Dynamic Range Trace SEBASTIAN W. WINKLER, WILLIAM M. DENNIS, University of Georgia, Department Physics and Astronomy — Frequency resolved optical gating (FROG) is a powerful technique that has been used to characterize the complex electromagnetic field of ultrafast pulses for more than a decade. However, FROG relies on detector with a high dynamic range; at least 10^4. If the detector's dynamic range is insufficient, the FROG phase retrieval code will not work properly. We describe a method to generate a single FROG trace with high dynamic range from multiple FROG traces of the same pulse but using different integration times. We present successfully retrieved fields from data captured using a spectrometer that would otherwise have insufficient dynamic range for FROG trace acquisition.

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