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Pump-probe Sub-additivity in Photoelectron Emission from GaAs[1] EVAN BRUNKOW, NATHAN CLAYBURN, HERMAN BATELAAN, TIMOTHY GAY, University of Nebraska- Lincoln — Using an autocorrelator and a pulsed laser with an 800 nm center wavelength, 10 nJ/pulse, and pulse duration of $\sim$ 50 fs at the target, we have shown that photoemission from GaAs induced by coherent pump and probe pulses with a temporal separation from 0 to 100 fs has a relationship that is more than additive. This implies that either the emission process is slower than 100 fs or that another process is occurring that affects the emission process itself [1]. We also have data with delays of $\sim$ 0.5 - 16 ps between the pump and probe that shows a sub-additive behavior, with a maximum effect of $\sim$ 11% at 6 ps. We present several theories as to what is causing this effect.

[1] E. Brunkow *et al.*, Bull. Am. Phys. Soc. **59** (2014)

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