

74. Title: Field-resolved characterization of femtosecond electromagnetic pulses with 400 THz bandwidth

Author: Thunich, S; Ruppert, C; Holleitner, AW; Betz, M

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Abstract: We propose and demonstrate an ultrabroadband concept to characterize amplitude and phase changes of femtosecond pulses. The radiation is superimposed with the first subharmonic spectral components from the same laser source. This effective  $\omega/2$   $\omega$ . pulse pair induces a coherently controlled charge current in a time-integrating semiconductor detector. An interferometric variation of the time delay between the harmonically related components then reveals the electric field of the  $2\omega$  part. This method is realized with the second harmonic of a compact Er: fiber source centered at 390 THz and a GaAs-based detector. Most strikingly, it is sensitive to similar to  $\pi/20$  phase changes and can be utilized to analyze femtojoule pulses.