

90. Title: Impact of dispersion, free carriers, and two-photon absorption on the generation of intense terahertz pulses in ZnTe crystals

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Abstract: We study the evolution of the energy and the spectrum of a terahertz wave generated by optical rectification of an ultrashort laser pulse in ZnTe crystals with different thicknesses. As the pump intensity increases, we observe a shift in the terahertz spectrum toward lower frequencies. Moreover, at high pump intensities, in disagreement with common sense, thin crystals have a better conversion efficiency than thicker ones. These phenomena are accounted for by the pump depletion induced by two-photon absorption, pulse broadening and the impact of the photoinduced free carriers on the complex refractive index of the crystal in the terahertz range.