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Title:Temperature dependence of nonequilibrium transport time of electrons in bulk GaAs investigated by time-domain terahertz spectroscopy

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Abstract:By using free space terahertz electro-optic sampling technique, the terahertz (THz) waveforms emitted from intrinsic bulk GaAs photoexcited by femtosecond laser pulses under strong bias electric fields at various temperatures were recorded. We clearly observe the velocity of electrons exhibits a pounced overshoot behavior. The nonequilibrium transport time of electrons, has been obtained from the THz waveforms. From the temperature dependence of we find that is governed by the polar scattering process of electrons in valley via longitudinal opticalphonon emissions.

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