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Title:High-field transport in an electron-hole plasma: Transition from ballistic to drift motion
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Abstract:The time evolution of high-field carrier transport in bulk GaAs is studied with intense femtosecond THz pulses. While ballistic transport of electrons occurs in an n-type sample, a transition from ballistic to driftlike motion is observed in an electron-hole plasma. This onset of friction is due to the holes, which are heated by THz absorption. Theoretical calculations, which reproduce the data quantitatively, show that both electron-hole scattering and local-field effects in the electron-hole plasma are essential for the time-dependent friction.
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