

Ultrafast dynamics in the $\text{FeSe}_{1-x}\text{Te}_x$ single crystals studied by femtosecond time-resolved spectroscopy

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We used femtosecond time-resolved spectroscopy to investigate the quasiparticle relaxation in $\text{FeSe}_{1-x}\text{Te}_x$ single crystals. The present experiments were performed by using standard pump-probe technique with 100 fs pump pulses at 400 nm and probe pulses at 800 nm. The amplitude of the photoinduced reflectivity changes ($\Delta R/R$) is strongly temperature-dependent. The abnormal change of the amplitude of $\Delta R/R$ at normal state is associated with the structure transition from tetragonal to orthorhombic in $\text{FeSe}_{1-x}\text{Te}_x$ single crystals. From the measured relaxation time of photoexcited quasiparticles, moreover, the electron-boson coupling strength in $\text{FeSe}_{1-x}\text{Te}_x$ superconductors could be further estimated by the standard scattering rate formulas.