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A doping dependent study of nonequilibrium quasiparticle dynamics in electron and hole doped BaFe_2As_2 DARIUS TORCHINSKY, JAMES MCIVER, DAVID HSIEH, MIT, G.F. CHEN, J.L. LUO, N.L. WANG, Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, NUH GEDIK, MIT — We report on measurements of the doping dependence of quasiparticle dynamics in single-crystals of $\text{Ba}_{1-x}\text{K}_x\text{Fe}_2\text{As}_2$ and $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$ in the superconducting state via ultrafast pump-probe spectroscopy. Quasiparticles are injected into the samples by ultrashort laser pulses. Once injected, they cause a reflectivity change of the sample at the laser frequency, allowing time-resolved optical measurements of their density. Our measurements reveal band-dependent quasiparticle recombination which provide clues on gap symmetry and electron-boson coupling.

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