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Magnetic field dependence of quasiparticle recombination times in superconducting NbTiN at low laser fluence¹ XIAOXIANG XI, JUNGSEEK HWANG, DAVID REITZE, CHRISTOPHER STANTON, DAVID TANNER, Department of Physics, University of Florida, LAWRENCE CARR, NSLS, Brookhaven National Laboratory — We use a pump-probe technique to study the temperature and field dependent quasiparticle recombination process in superconducting Nb_{0.5}Ti_{0.5}N in the low laser fluence regime. The sample was excited by a picosecond near-infrared Ti:Sapphire laser pulses and probed with sub-nanosecond infrared synchrotron pulses at the National Synchrotron Light Source, Brookhaven National Laboratory. Time-resolved photoinduced transmission data were obtained as a function of temperature (2.2-10 K) and magnetic field (0-10 T), from which we calculated the quasiparticle effective lifetime. Both temperature and field dependence were observed, with the effective lifetime increasing as the field became stronger. A model of this phenomenon will be discussed.

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