

Abstract Submitted
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Measurements of the quasiparticle recombination process in a type II superconductor with field-suppressed energy gap¹ XIAOXIANG XI, Department of Physics, University of Florida, J. HWANG, Department of Physics, Pusan National University, H. ZHANG, Department of Physics, University at Buffalo, D.H. REITZE, C.J. STANTON, D.B. TANNER, Department of Physics, University of Florida, G.L. CARR, NSLS, Brookhaven National Laboratory — Our pump-probe studies of excess quasiparticle relaxation in the type II superconductor NbTiN show a relaxation rate proportional to the excess quasiparticle number density, as expected for bimolecular recombination driven by a large excess quasiparticle population. Application of a magnetic field parallel to the sample surface is found to slow significantly the quasiparticle recombination process. We compare our results with a model of recombination that considers two candidate magnetic field effects: quasiparticle spin polarization (paramagnetism) and finite pair lifetime effects, with the latter appearing to be the more important.

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