Abstract Submitted
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Time-resolved infrared spectroscopy of superconducting NbTiN films[1] H. ZHANG, D.H. REITZE, C.J. STANTON, D.B. TANNER, Department of Physics, University of Florida, R.P.S.M. LOBO, ESPCI-CNRS, G.L. CARR, Brookhaven National Laboratory — Time-resolved, pump-probe measurements of superconducting thin NbTiN films were performed at the National Synchrotron Light Source, Brookhaven National Laboratory. Near-infrared Ti:sapphire laser pulses break Cooper pairs, producing an excess of non-thermal quasiparticles. The recombinations of these excess quasiparticles are probed by time-synchronized, far-infrared, synchrotron pulses, with a time resolution of order 200 picoseconds. The main process probed is the bottleneck between gap-edge quasiparticles and excess 2Δ phonons. (The phonons, generated by recombination of quasiparticles into Cooper pairs, are pairbreaking, producing gap-edge quasiparticles.) We will report the temperature, magnetic field, and laser fluence dependence of the spectrum-averaged far-infrared photoinduced transmission and reflection. We will also report the changes in the photoinduced far-infrared transmission spectrum.

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