

Abstract Submitted  
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**Spin and charge dynamics of photogenerated quasiparticles in superconducting NbTiN<sup>1</sup>** JUNGSEEK HWANG, XIAOXIANG XI, DAVID REITZE, CHRISTOPHER STANTON, DAVID TANNER, University of Florida, LARRY CARR, Brookhaven National Laboratory — We use time-resolved broadband far-infrared spectroscopy to study the dynamics of photogenerated quasiparticles in superconducting Nb<sub>0.5</sub>Ti<sub>0.5</sub>N. The pump-probe measurements used picosecond pulses from a near-infrared Ti:sapphire laser as a pump and subnanosecond pulses of infrared synchrotron radiation as the probe. Measurements were done as a function of fluence and applied magnetic field. The measurements were performed at the National Synchrotron Light Source, Brookhaven National Laboratory.; We report the photoinduced far-infrared transmission at 2 K for two different field orientations: perpendicular and parallel to the Nb<sub>0.5</sub>Ti<sub>0.5</sub>N film. The decay does not follow a simple exponential. We observed a linear scaling behavior between the number of photoexcited quasiparticles and the relaxation rate. In addition, the relaxation rate decreases linearly with magnetic field, attributed to spin polarization of the quasiparticles in the field.

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Jungseek Hwang  
University of Florida

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