Abstract Submitted
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Multiband superconductivity in $2H$-$NbSe_2$ probed by Doppler-modulated scanning tunneling spectroscopy[1] I. FRIDMAN, Quantum Applied Science and Research, Inc., C. KLOC, Nanyang Technological University, Singapore, C. PETROVIC, Brookhaven National Laboratory, J. Y. T. WEI, University of Toronto and Canadian Institute for Advanced Research — Cooper pairing in multiband superconductors can involve carriers from bands having different dimensionalities, and the interband coupling can provide for novel pairing interactions. In addition to MgB_2, recent experiments on $2H$-$NbSe_2$ have studied the Fermi surface topology using angle- and temperature-dependent scanning tunneling spectroscopy.[1] We present another novel method for probing multiband pairing: using a field-induced diamagnetic supercurrent, applied along different crystal axes, to perturb the quasiparticle density-of-states spectrum. By measuring the evolution of the quasiparticle spectrum under finite superfluid momentum, we characterize the pairing gaps and gap anisotropies. This approach is demonstrated on $2H$-$NbSe_2$ at 300 mK with a magnetic field of up to 9 T applied in the *ab*-plane.[2] The STM measurements revealed unambiguous evidence for multiband pairing, and evidence for a novel transition of the in-plane vortex lattice. We discuss the characteristics of this transition in light of data from other probes. [1] Y. Noat *et al.*, Phys. Rev. B 92, 134510 (2015). [2] I. Fridman *et al.*, Applied Physics Letters 99, 192505 (2011).

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