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Cryomagnetic STM imaging of the subsurface vortex lattice in the multiband superconductor $2H$-$NbSe_2$[1] IGOR FRIDMAN, University of Toronto, V. LUKIC, Stevens Institute of Technology, C. KLOC, Nanyang Technological University, Singapore, C. PETROVIC, Brookhaven National Laboratory, J.Y.T. WEI, University of Toronto and Canadian Institute for Advanced Research — Using cryomagnetic scanning tunneling microscopy (STM) in a novel field geometry, we studied single crystals of the multiband superconductor $2H$-$NbSe_2$ under diamagnetically-induced superfluid momentum. Spectroscopy and conductance imaging were performed at 300 mK and in a field of up to 9 T, applied in the *ab*-plane.[1] Spatial maps of the Doppler effect on the quasiparticle tunneling spectrum revealed distinct stripe patterns that originate from in-plane vortices whose cores are buried in the bulk.[2] The stripe separation varies systematically as a function of the applied field. Our results are interpreted in terms of the interaction between vortical and screening currents, and demonstrate a general method for probing subsurface vortices, especially in emerging multiband superconductors such as the ferro-pnictides/chalcogenides.

[1] I. Fridman *et al.*, arXiv:1110.6490 (2011)
[2] I. Fridman *et al.*, Appl. Phys. Lett. **99**, 192505 (2011)

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Igor Fridman
University of Toronto

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