

Abstract Submitted
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Vortex Noise in Thin Nb Films on a Triangular Anti-Dot Lattice¹

TANNER SCHULZ, Department of Physics and Astronomy, University of Minnesota, LIWEN TAN, BETH STADLER, Department of Electrical and Computer Engineering, University of Minnesota, E. DAN DAHLBERG, Department of Physics and Astronomy, University of Minnesota — Thin Nb films are deposited on a periodic, triangular, anti-dot lattice with a lattice constant of 100nm. The lattice serves as pinning sites where superconducting vortices are trapped. The vortex density is set by an external field. At a vortex density commensurate with the pinning lattice transport measurements show an increase in current density. Interstitial vortex pinning produces similar current features at integer multiples of the matching field. We examine the voltage noise spectra as the applied field and DC current bias are varied. Noise signals appear above a field dependent threshold current and show minima at the matching fields. The noise is due to vortex motion in a pinning potential that varies with vortex density and driving forces. We use our results to study vortex motion and compare our signals to existing vortex noise models.

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