

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Vortex interactions in superconducting weak-pinning channel ratchets¹ K. YU, T.W. HEITMANN, C. SONG, M.P. DEFEO, B.L.T. PLOURDE, Syracuse University, M.B.S. HESSELBERTH, P.H. KES, Leiden University — We report on measurements of vortex ratchets fabricated from weak-pinning superconducting a-NbGe channels bounded by strong-pinning NbN banks with asymmetric sawtooth edges. This configuration for the vortex confinement potential results in an asymmetric response for the vortex dynamics in the channels. Interactions between vortices, both within a channel and between neighboring channels, have a substantial influence on the ratchet behavior, including certain regimes where the net vortex motion through the ratchet reverses direction. We discuss our measurements in terms of a model for describing the vortex interactions in the ratchet channels.

¹Supported by NSF DMR-0547147

K. Yu
Syracuse University

Date submitted: 21 Nov 2008

Electronic form version 1.4