Abstract Submitted
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Flux-flow noise in a superconducting Corbino vortex ratchet channel[1] T.W. HEITMANN, K. YU, C. SONG, M.P. DEFEO, B.L.T. PLOURDE, Syracuse University, M.B.S. HESSELBERTH, P.H. KES, Leiden University — We report measurements of vortex dynamics in a single nanofabricated weak-pinning ratchet channel of a-NbGe with strong-pinning NbN channel edges. The channel is arranged in a circle on a Corbino disk geometry with a radial bias current, thus eliminating the influence of edge barriers to vortex entry on the dynamics and resulting in closed circular orbits for the vortices. An asymmetric sawtooth shape for the channel walls produces a ratchet effect, resulting in large differences in the critical current for the two flow directions. The SQUID picovoltmeter that we have developed for resolving the flux-flow voltage provides a low noise floor such that we can resolve structure in the flux-flow noise, with substantial asymmetries for vortex motion in the two directions through the ratchet channel.

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