

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Driven magnetic vortices in a type-II superconductor: Relaxation following sudden parameter quenches¹ HARSHWARDHAN CHATURVEDI, Department of Physics, VA Tech, ULRICH DOBRAMYSL, Mathematical Institute, University of Oxford, MICHEL PLEIMLING, UWE TÄUBER, Department of Physics, VA Tech — Type-II superconductors in the mixed phase display complex non-equilibrium phenomena governed by competing energy, length, and time scales. We model the magnetic vortices in the extreme London limit as interacting elastic lines. We employ a Langevin Molecular Dynamics algorithm to study the non-equilibrium relaxation behavior of relevant two-time correlation functions in the presence of point or columnar pinning centers. We consider the effects of sudden external control parameter quenches at non-zero external driving currents, as the vortex system relaxes towards a new non-equilibrium steady state.

¹Research supported by the U.S. Department of Energy, Office of Basic Energy Sciences, Division of Materials Sciences and Engineering under Award DE-FG02-09ER46613.

Harshwardhan Chaturvedi
Virginia Polytechnic Institute

Date submitted: 16 Nov 2013

Electronic form version 1.4