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Non-equlibrium relaxation of vortex lines in disordered type-II superconductors[1] ULRICH DOBRAMYSL, HIBA ASSI, MICHEL PLEIMLING, UWE C. TÄUBER, Department of Physics, Virginia Tech — Vortex matter in disordered type-II superconductors display a remarkable wealth of behavior, ranging from hexagonally arranged crystals and a vortex liquid to glassy phases. The type and strength of the disorder has a profound influence on the structural properties of the vortex matter: Randomly distributed weak point pinning sites lead to the destruction of long range order and a Bragg glass phase; correlated, columnar disorder can yield a Bose glass phase with infinite tilt modulus. We employ a three-dimensional elastic line model and apply a Langevin molecular dynamics algorithm to simulate the dynamics of vortex lines in a dissipative medium. We investigate the relaxation of a system of lines that were initially prepared in an out-of-equilibrium state and characterize the transient behavior via two-time quantities. We vary the disorder type and strength and compare our results for random and columnar disorder.

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Ulrich Dobramysl
Department of Physics, Virginia Tech

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