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Flux line relaxation kinetics following current quenches in disordered type-II superconductors[1] HARSHWARDHAN CHATURVEDI, Department of Physics, Virginia Tech, Blacksburg, Virginia 24061-0435, United States, HIBA ASSI, Physics and Engineering Department, Washington and Lee University, Lexington, Virginia 24450, United States, ULRICH DOBRAMYSL, Wellcome Trust / CRUK Gurdon Institute, University of Cambridge, Tennis Court Rd, Cambridge CB2 1QN, United Kingdom, MICHEL PLEIMLING, UWE TÄUBER, Department of Physics, Virginia Tech, Blacksburg, Virginia 24061-0435, United States — We describe the disordered vortex system in type-II superconductors with an elastic line model, whose dynamics we investigate numerically by means of Langevin Molecular Dynamics. A system of driven interacting flux lines in a sample with randomly distributed point pinning centers is subjected to drive quench from a moving non-equilibrium steady state into one of three regimes viz. moving (steady state), pinned (glassy) or depinning (critical). The first yields fast exponential relaxation to the new non-equilibrium stationary state while the second displays algebraically slow relaxation and aging scaling with non-universal exponents. Our most recent work consists of aging and finite temperature scaling studies for drive quenches into the critical depinning regime.

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Harshwardhan Chaturvedi
Virginia Tech, Blacksburg, Virginia 24061-0435, United States

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