

Abstract Submitted
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Vortex relaxation in type-II superconductors following current quenches¹ HARSH CHATURVEDI, HIBA ASSI, Virginia Tech, ULRICH DOBRAMYSL, Mathematical Institute, University of Oxford, UK, MICHEL PLEIMLING, UWE TÄUBER, Virginia Tech — The mixed phase in type-II superconductors is characterized by the presence of mutually repulsive magnetic flux lines that are driven by external currents and pinned by point-like or extended material defects. We represent the disordered vortex system in the London limit by an elastic directed line model, whose relaxational dynamics we investigate numerically by means of Langevin Molecular Dynamics. We specifically study the effects of sudden changes of the driving current on the time evolution of the mean flux line gyration radius and the associated transverse displacement correlation functions. Upon quenching from the moving into the pinned glassy phase, we observe algebraically slow relaxation. The associated two-time height-autocorrelations display broken time translation invariance and can be described by a simple aging scaling form, albeit with non-universal scaling exponents.

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