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Fluxon relaxation in superconductors KURT STANGEL, RALPH CHAMBERLIN, NATHAN NEWMAN, Arizona State University, JIANYI JIANG, Florida State University, BRIAN MOECKLY, Superconductor Technologies Incorporated — Using a high-speed SQUID magnetometer, we measure the relaxation of magnetic flux quanta (fluxons) in superconductors as a function of time after removing an applied field. When relatively small fields are removed, the relaxation is accurately described by a logarithmic time dependence, consistent with the Anderson-Kim theory for fluxon motion. However, when larger fields are removed, we see faster fluxon motion at short times and slower relaxation at long times, similar to a collective pinning model. This non-logarithmic relaxation often appears with a saturation in the relaxation slope, which may come from a crossover to strongly interacting fluxons when their average separation becomes less than the London penetration depth.

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