

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Magnetic decoration imaging of a superconductor-ferromagnet bilayer MAXIM MARCHEVSKY, Lawrence Berkeley National Laboratory — Magnetic decoration imaging technique is used to study flux distribution and local vortex order in a superconducting Nb film deposited on a ferromagnetic yttrium-iron garnet substrate. Ambient field-cooled decoration patterns reveal concentration of vortices in the Nb along the labyrinthine magnetic domains of the garnet. Re-magnetization cycles result in a formation of the complex “vortex foam” structure due to a coupled magnetic dynamics of the superconductor-ferromagnet (S/F) bilayer system. We analyze density variations and spatial distribution of vortices in these structures. Flux exit patterns obtained upon removal of an external magnetic field show large-scale inhomogeneity of the vortex flow. Results are compared to the recent theoretical predictions and reported studies of S/F systems by other imaging methods.

Maxim Marchevsky
Lawrence Berkeley National Laboratory

Date submitted: 12 Dec 2012

Electronic form version 1.4