

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Novel time-dependent Ginzburg-Landau simulation of extreme type-II superconductors with a focus on the Nernst signal and its fluctuations SANGWOO CHUNG, University of Cincinnati, PAATA KAKASHVILI, NORDITA, Sweden, CARLOS BOLECH, University of Cincinnati — Recently, different transport coefficients have been measured in High- T_c superconductors to pinpoint the nature of the pseudogap phase. In particular, the thermoelectric coefficients received a considerable attention both theoretically and experimentally. We numerically simulate the Nernst effect in extreme type-II superconductors using the time-dependent Ginzburg-Landau equations. We report the sign reversal of the thermoelectric coefficient, α_{xy} , at temperatures close to the mean-field transition temperature $T_c^{MF}(H)$, which qualitatively agrees with recent experiments on high- T_c materials. We also discuss the noise power spectrum of α_{xy} , which shows $1/f^\beta$ behavior. Based on this observation, we propose an experiment to determine different regimes of vortex dynamics by measuring the noise correlations of the Nernst signal.

Sangwoo Chung
University of Cincinnati

Date submitted: 17 Nov 2010

Electronic form version 1.4