Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Nernst effect in the phase-fluctuating superconductor InO_x
PANAYOTIS SPATHIS, HERVE AUBIN, ALEXANDRE POURRET, CIGDEM CAPAN, KAMRAN BEHNIA, ESPCI — We present a study of the Nernst effect in the amorphous superconductor InO_x. The low carrier density in this system implies a weak superfluid stiffness and consequently, strong phase fluctuations of the superconducting order parameter are expected. Measurements as function of temperature show that the Nernst signal evolves continuously through the superconducting transition as previously observed in underdoped cuprates. This contrasts with the abrupt jump expected at a BCS transition, as observed previously in $Nb_{0.15}Si_{0.85}$. In the last system, the Nernst signal due to vortices below T_c and by Gaussian fluctuations above are clearly distinct [1]. The behavior of the ghost critical field in InO_x points to a correlation length which does not diverge at the Cooper-pair forming temperature T_c, a temperature below which the amplitude fluctuations freeze, but phase fluctuations survive. [1] Pourret et al, Nature Physics 2, 683 (2006)

Panayotis Spathis
ESPCI

Date submitted: 27 Nov 2007 Electronic form version 1.4