Abstract Submitted
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Collective action of nanopatterned pins: barrier towards creating interstitial vortices[1] GORKY SHAW, SHYAM MOHAN, JAIVARDHAN SINHA, SATYAJIT BANERJEE, Department of Physics, Indian Institute of Technology, Kanpur-208016, U. P., India — We show that by nano-patterning a superconductor ($NbSe_2$singlecrystal) with an array of blind holes produces significant magnetic field sweep rate dependent metastable magnetization response[1]. Our results are explained on the basis of a unique collective action of the blind holes pins which creates a barrier against vortex redistribution inside the sample. We propose that this barrier leads to a phase separation creating distinct population of vortices viz., those pinned on blind holes and those confined in the interstitials between the holes [1]. We find that due to the barrier, there is a significant enhancement in the stability of vortices against thermal fluctuations. [1] Gorky Shaw, Shyam Mohan, Jaivardhan Sinha and S. S. Banerjee* (submitted; xxx.lanl.gov/abs/0811.1256) **satyajit@iitk.ac.in*

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