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Instabilities and nonlinearities in the elastic vortex solid¹ SATYAJIT BANERJEE, SHYAM MOHAN, JAIVARDHAN SINHA, Department of Physics, Indian Institute of Technology, Kanpur-208 016, U. P., India, S. RAMAKRISHNAN, A.K. GROVER, AJAY SOOD, Department of Physics, Indian Institute of Science, Bangalore 560012, India — In recent times the influence of microscopic disorder has been viewed to play a crucial role in determining the configuration of vortices inside superconductors. Our recent investigations into the dissipation properties of the driven vortices [1], have found the existence of possible symmetry changes deep within the well ordered elastic vortex solid [1]. The result is significant, as it requires a deeper revision of understanding the properties of the so called ‘benign’ elastic vortex solid. We have also studied the nonlinear properties of the driven elastic vortex solid [2] through a random pinning environment and have found interesting highly nonlinear fluctuation in the time domain. We believe our results indicate the presence of process deep within the elastic driven phase which is a precursor to the plastic transformation in the vortex matter. [1] Shyam Mohan, Jaivardhan Sinha, S. S. Banerjee*, and Yuri Myasoedov, Phys. Rev. Lett. 98,027003 (2007). [2] Shyam Mohan, Jaivardhan Sinha, S. S. Banerjee* A. K. Sood, S. Ramakrishna, A. K. Grover (submitted, 2008) **satyajit@iitk.ac.in*

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