

Abstract Submitted
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Stochastic Resonance Magnetic Force Microscopy imaging of Josephson Arrays TYLER NAIBERT, HRYHORIY POLSHYN, BRIAN WOLIN, MALCOLM DURKIN, RITA GARRIDO MENACHO, IAN MONDRAGON SHEM, VICTOR CHUA, TAYLOR HUGHES, NADYA MASON, RAFFI BUDAKIAN, University of Illinois at Urbana-Champaign — Vortex interactions are key to explaining the behavior of many two dimensional superconducting systems. We report on the development of a technique to locally probe vortex interactions in a 2D array of Josephson junctions. Scanning a magnetic tip attached to an ultra-soft cantilever over the array produces changes in the frequency of the cantilever along certain lines, forming geometric patterns in the scans. Different tip-surface separations and external magnetic fields produce a number of different patterns. These patterns correspond to tip locations in which two configurations of vortices in the lattice have degenerate energies. By imaging the locations of these degeneracies, information on the local vortex interactions may be obtained.

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