

Vortex Motion in High- T_c Films and a Micropattern-induced Phase Transition

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Abstract - A micropattern-induced transition in the mechanism of vortex (magnetic flux quantum) motion and vortex mobility is observed in high- T_c thin films. The competition between the anomalous Hall effect (AHE) and the guidance of vortices by rows of micro-holes (antidots) lead to a sudden change in the direction of vortex motion that is accompanied by a change in the critical current density and microwave losses. The latter effect demonstrates the difference in vortex mobility in different phases of vortex motion in between and within the rows of antidots.

Keywords - vortex matter, vortex manipulation, anomalous Hall effect, guide motion of vortices, high- T_c films

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