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Magnetic coupling between vortices in superconductors and adjacent magnetic layers MASAKI SUENAGA, QIANG LI, QING JIE, Brookhaven National Laboratory — We presented a study of magnetic coupling between vortices in superconductors and adjacent magnetic layers in two systems: superconductor/magnetic multilayers and HTS films on magnetic substrates. The flux motion in superconductor and the behavior of magnetic layer (or magnetic substrate) were captured by quantitative Magneto-optical imaging (MOI) technique with an external magnetic field applied perpendicular to the sample surface and varied along a whole hysteresis loop cycle. Bulk dc SQUID magnetization, ac loss, and direct transport measurements were performed to compliment the MOI studies. It was found that magnetic substrate has limited effect on transport properties of HTS films, although some enhancement of J_c was observed near T_c in the multilayers due to the magnetic coupling. However, magnetic substrate did result in significant reduction of the ac losses.

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