

# **Dynamics of Magnetostatically Coupled Vortices Observed by Time-Resolved Photoemission Electron Microscopy**

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The dynamics of magnetostatically coupled vortices in a pair of ferromagnetic micron-sized disks has been observed in real space by pump-probe time-resolved photoemission electron microscopy. It is found that the dynamics of paired vortices is affected by a magnetic dipolar interaction. The displacement of a vortex core from its equilibrium position in the paired vortices during the supply of a magnetic field pulse is smaller than that in the isolated vortex, which is in qualitative agreement with micromagnetic simulation results. Unexpectedly, two eigenfrequencies of the paired vortices are different from each other. When the separation distance between the paired disks is shorter, the difference between the two eigenfrequencies is larger.