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Ferromagnetic Resonance Investigation of an Individual Permalloy Dot Using Magnetic Resonance Force Microscopy J. KIM, I.H. LEE, D. PELEKHOV, YU. OBUKHOV, P. BANERJEE, The Ohio State University, I. MARTIN, Los Alamos National Laboratory, P. WIGEN, P.C. HAMMEL, The Ohio State University — We report Ferromagnetic Resonance (FMR) investigations of individual 5.3 micron diameter permalloy dots using low temperature (4 K) Magnetic Resonance Force Microscopy (MRFM). The dot magnetization is saturated in the external magnetic field perpendicular to the plane of the sample. The evolution of the MRFM signal as probe-sample separation and the lateral probe position are varied reveals the shape of the magnetostatic modes excited in the dot in the presence of the strongly inhomogeneous magnetic field of the MRFM probe magnet. The experimental data agree excellently with micromagnetic modeling which suggests that localized FMR modes are excited in the sample. This effect opens the way for spatially resolved studies of ferromagnetic systems.

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