

Abstract Submitted  
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**Quantitative characterization of a thin ferromagnetic film by pi-MFM and FMRFM<sup>1</sup>** Y. OBUKHOV, I.H. LEE, D.V. PELEKHOV, Ohio State University, E. NAZARETSKI, Los Alamos National Lab, P. BANERJEE, P.C. HAMME, Ohio State University — We present a theoretical analysis of two new methods for high resolution magnetic characterization of magnetic materials. These two, probe-induced ( $\pi$ ) Magnetic Force Microscopy and Ferromagnetic Resonance Force Microscopy are related in exploiting the modification of sample properties by the magnetic field of the probe to enable new imaging capabilities. Our analytic theory enables quantitative modeling of signals obtained in these two microscopy methods, and so allows us to extract parameters describing the magnetic properties of ferromagnetic films. We compare our theory with experimental data and find excellent agreement. More detailed experimental data will be presented in an accompanying talk. Our methodology allows detailed local characterization of ferromagnetic films in complementary MFM and MRFM experiments.

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