

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Quantitative determination of penetration depth using magnetic force microscopy¹ JOSHUA THIBODAux, Louisiana State University, EVGUENI NAZARETSKI, Los Alamos National Laboratory and Brookhaven National Laboratory, LEONARDO CIVALE, JOE THOMPSON, ROMAN MOVSHOVICH, Los Alamos National Laboratory, ILYA VEKHTER, Louisiana State University — Extracting quantitative information from magnetic force microscopy has long been considered a difficult problem. We present a method to extract a numerical value of the penetration depth utilizing detailed knowledge of the MFM tip properties. Modeling the vortex field as that of a magnetic monopole we use the experimental data on a Nb film to find a penetration depth that is in good agreement with SQUID magnetometer measurements. We discuss the influence of tip geometry on the extracted values of the penetration depth and explore the differences between the simple model of the vortex field and a detailed calculation in the London model.

¹Supported by US DoE via Grant No DE-FG02-08ER46492

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Date submitted: 20 Nov 2009

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