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Effect of interactions on edge property measurements in magnetic multilayers¹ ROBERT MCMICHAEL, Center for Nanoscale Science and Technology, NIST, Gaithersburg, MD USA, MENG ZHU, Center for Nanoscale Science and Technology, NIST and Maryland NanoCenter, University of Maryland, College Park, MD USA — The edges of patterned thin films are important, especially in magnetic nanostructures. In previous work, it has been shown that the magnetic properties of film edges in Ni₈₀Fe₂₀ (Py) stripe arrays can be measured with a precision of a few percent using the ferromagnetic resonance (FMR) of localized edge modes. In this work, we extend this measurement technique to multilayer films, showing the effects of interactions between edge modes in the magnetic layers. We fabricate magnetic multilayer stripes consisting of 10 nm Py / x Cu / 20 nm Py, where x ranges from 1 nm to 20 nm, and we find that the edge saturation fields of both Py layers increase as the spacer is reduced, indicating enhanced magnetostatic interactions. An approximate analytical model based on the static dipolar interactions is used to simulate experimental and micromagnetic model data.

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