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**Broadband Magnetic Resonance Measurements on Periodic Patterned Disc and Hole Arrays** J. SKLENAR, Northwestern University, V.S. BHAT, L. DELONG, University of Kentucky, V. METLUSHKO, University of Illinois, Chicago, C.C. TSAI, Chang Jung Christian University, Taiwan, O. CHERNYASHEVSKYY, Northwestern University, K. RIVKIN, Seagate Technologies, J.B. KETTERSON, Northwestern University — We have made broadband ferromagnetic resonance measurements on patterned permalloy arrays consisting of circular dots (discs) and both square and circular anti-dots (holes). We employ a transmission meander line approach as opposed to a resonant cavity technique, and cover the frequency range 10MHz to 20GHz. Experiments are performed at a fixed frequency by sweeping the field (through positive and negative values) and at a fixed field while varying the frequency; both magnetic field and frequency modulation are employed to suppress noise and background effects. Experiments on hole arrays show two dominant resonances which from their symmetry appear to be standing spin waves centered at the X- points of the square Brillouin zone. Low field measurements on disc arrays where the field is swept over varying ranges in the region where the sample is hysteretic while tracking the history dependent disappearance and reappearance of the uniform FMR mode, allows a determination of the phase boundaries separating the single and double vortex states, and are in agreement with simulations by Rivkin.

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