Abstract Submitted
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Spin waves in perpendicularly magnetized nanoscale permalloy dots MARK ZIMMERMAN, CHENGTAO YU, MICHAEL PECHAN, Miami University, Oxford OH 45056, JORDAN KATINE, LIESL FOLKS, MATTHEW CAREY, Hitachi Global Storage Technologies, San Jose, CA 95120 — Square arrays of permalloy dots, 100 nm, 200 nm, 500 nm, and 1000 nm in diameter and 40 nm thickness, were created using electron-beam lithography. Ferromagnetic resonance measurements were made at 9.7 GHz with magnetic field was applied out of plane. In addition to the usual uniform mode, a manifold of lower field spin wave (SW) modes were observed for each sample. The spacing between the SW modes exhibits an inverse relationship with the dot diameter. Micromagnetic simulations performed using the open source program OOMMF, are in agreement with experimental results. The SW mode geometry is consistent with "drum head" type modes described by Bessel functions as described recently in other dot structures [1]. Supported by US DOE FG02-86ER45281 (MU).

1. G. N. Kakazei, et. al., APL, 85, 443 (2004).

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