



Simulated Magnetization Reversal in Fe Nanopillar

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We show snapshots of magnetic flux lines in a simulated $10 \times 10 \times 150 \text{ nm}^3$ iron pillar undergoing magnetization reversal in an applied magnetic field that makes an angle of 75° with the pillar's axis.¹ Finite-temperature micromagnetics simulations² were performed on an IBM SP3 supercomputer and the results visualized with the Tecplot[®] graphics package. Red: the z -component of the

magnetization, m_z , oriented opposite to that of the field (metastable state). Blue: m_z oriented along that of the field (stable state). Reversal is triggered by thermal fluctuations near the pillar's ends. Left: initial state at $T = 0 \text{ K}$. Middle: just after thermalization to 20 K . Right: the domain wall between the metastable and stable regions has detached from the upper end, and the reversal is almost completed.

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¹S. H. Thompson, G. Brown, and P. A. Rikvold, *J. Appl. Phys.* **97**, 10E520 (2005).

²G. Brown, M. A. Novotny, and P. A. Rikvold, *Phys. Rev. B* **64**, 134422 (2001).