

Metastability and magnetization switching in nanoscale ferromagnets

P. A. Rikvold

Metastability

“Metastable Lifetimes in a Kinetic Ising Model: Dependence on Field and System Size.” P. A. Rikvold, H. Tomita, S. Miyashita, and S. W. Sides. [Phys. Rev. E **49**, 5080-5090 \(1994\)](#).

“Recent Results on the Decay of Metastable Phases.” P. A. Rikvold and B. M. Gorman. In *Annual Reviews of Computational Physics I*, edited by D. Stauffer (World Scientific, Singapore, 1994), pp. 149-191. [Reprint](#).

“Test of the Kolmogorov-Johnson-Mehl-Avrami Picture of Metastable Decay in a Model with Microscopic Dynamics.” R. A. Ramos, P. A. Rikvold, and M. A. Novotny. [Phys. Rev. B **59**, 9053-9069 \(1999\)](#).

“Extreme Long-time Dynamic Monte Carlo Simulations for Metastable Decay in the $d=3$ Ising Ferromagnet.” M. Kolesik, M. A. Novotny, and P. A. Rikvold. [Int. J. Mod. Phys. C **14**, 121-132 \(2003\)](#).

Some systems with long-range interactions

“Realization of the Mean-field Universality Class in Spin-crossover Materials.” S. Miyashita, Y. Konishi, M. Nishino, H. Tokoro, and P. A. Rikvold. [Phys. Rev. B **77**, 014105 \(2008\) \(12 pages\)](#).

“Threshold Phenomena under Photo Excitation of Spin-crossover Materials with Cooperativity due to Elastic Interactions.” S. Miyashita, P. A. Rikvold, T. Mori, Y. Konishi, M. Nishino, and H. Tokoro. Submitted to *Phys. Rev. Lett.* Preprint: [arXiv:0905.1161 \[cond-mat.stat-mech\]](#).

“Scaling Properties of the Relaxation Time near the Mean-field Spinodal.” T. Mori, S. Miyashita, and P. A. Rikvold. Submitted to *Phys. Rev. E*. Preprint: [arXiv:0905.0089 \[cond-mat.stat-mech\]](#).

Ising models of magnetization switching

“Magnetization Switching in Nanoscale Ferromagnetic Grains: Description by a Kinetic Ising Model.” H. L. Richards, S. W. Sides, M. A. Novotny, and P. A. Rikvold. [J. Magn. Mater. **150**, 37-50 \(1995\)](#).

“Effects of Boundary Conditions on Magnetization Switching in Kinetic Ising Models of Nanoscale Ferromagnets.” H. L. Richards, M. Kolesik, P.-A. Lindgård, M. A. Novotny, and P. A. Rikvold. [*Phys. Rev. B* **55**, 11521-11540 \(1997\)](#).

“Monte Carlo Simulation of Magnetization Switching in Fe Sesquilayers on W(110).” M. Kolesik, M. A. Novotny, and P. A. Rikvold. [*Phys. Rev. B* **56**, 11791-11796 \(1997\)](#).

“Large-Scale Computer Investigations of Finite-Temperature Nucleation and Growth Phenomena in Magnetization Reversal and Hysteresis.” M. A. Novotny, G. Brown, and P. A. Rikvold. [*J. Appl. Phys.* **91**, 6908-6913 \(2002\)](#).

Micromagnetics

“Langevin Simulation of Thermally Activated Magnetization Reversal in Nanoscale Pillars.” G. Brown, M. A. Novotny, and P. A. Rikvold. [*Phys. Rev. B* **64**, 134422 \(2001\) \(14 pages\)](#).

“Resolution-dependent Mechanisms for Bimodal Switching-time Distributions in Simulated Fe Nanopillars.” S. H. Thompson, G. Brown, A. Kuhnle, P. A. Rikvold, and M. A. Novotny. [*Phys. Rev. B* **79**, 024429 \(2009\) \(9 pages\)](#).

“Two Modes of Magnetization Switching in a Simulated Iron Nanopillar in an Obliquely Oriented Field.” S. H. Thompson, G. Brown, P. A. Rikvold, and M. A. Novotny. Submitted to *J. Magn. Magn. Mater.* Preprint: [arXiv:0705.4454 \[cond-mat.stat-mech\]](#)

Hysteresis and dynamic phase transition in ultrathin magnetic layers

“Stochastic Hysteresis and Resonance in a Kinetic Ising System.” S. W. Sides, P. A. Rikvold and M. A. Novotny. [*Phys. Rev. E* **57**, 6512-6533 \(1998\)](#).

“Kinetic Ising Model in an Oscillating Field: Avrami Theory for the Hysteretic Response and Finite-Size Scaling for the Dynamic Phase Transition.” S. W. Sides, P. A. Rikvold and M. A. Novotny. [*Phys. Rev. E* **59**, 2710-2729 \(1999\)](#).

“Dynamic Phase Transition, Universality, and Finite-size Scaling in the Two-dimensional Kinetic Ising Model in an Oscillating Field.” G. Korniss, C. J. White, P. A. Rikvold, and M. A. Novotny. [*Phys. Rev. E* **63**, 016120 \(2001\) \(15 pages\)](#).

“Conjugate Field and Fluctuation-dissipation Relation for the Dynamic Phase Transition in the Two-dimensional Kinetic Ising Model.” D. T. Robb, P. A. Rikvold, A. Berger, and M. A. Novotny. [*Phys. Rev. E* **76**, 021124 \(2007\) \(10 pages\)](#).

“Evidence for a Dynamic Phase Transition in [Co/Pt]₃ Magnetic Multilayers.” D. T. Robb, Y. H. Xu, O. Hellwig, A. Berger, M. A. Novotny, and P. A. Rikvold. [*Phys. Rev. B* **78**, 134422 \(2008\) \(11 pages\)](#).