Numerical simulations of dynamic phase transitions in magnetic domain-wall motion

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With Monte Carlo simulations and molecular dynamics simulations, we investigate the magnetic domain-wall dynamics in low dimensions and at a zero or low temperature. Based on the Ising model, Clock model and $\phi^4$ theory with quenched disorder and under different driving fields, we systematically study the pinning-depinning transition and relaxation-to-creep transition of domain-wall motion. Results are compared with experiments and other theories.

References