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Simulation on depinning of a magnetic domain wall based on Heisenberg spin model KATSUYOSHI MATSUSHITA, XIAO HU, National Institute for Materials Science — Motion of magnetic-field driven magnetic domain-wall subject to random pinning centers has attracted much attention. One of the characteristic phenomena in the system is the depinning transition at non-zero depinning force. It is expected that such motion can be described by an elastic deformable interface in a disordered medium. The depinning transition of a magnetic domain wall in an Ising spin system with random pinning fields has been studied which confirmed this expectation. In the present study, by using Monte Carlo and molecular dynamics simulations, we investigate motion of a domain wall in a Heisenberg spin system. In contrast to the Ising case, we observed discontinuous jump in domain-wall velocity upon depinning. Simulation results will be presented and the physics behind the difference will be discussed.

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