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Nonequilibrium phase transition in a driven Potts model with friction[1] MICHEL PLEIMLING, Virginia Tech, FERENC IGLÓI, Research Institute for Solid State Physics and Optics, Budapest, Hungary, and Szeged University, Hungary, LOÏC TURBAN, University Nancy, France — We consider magnetic friction between two systems of q-state Potts spins which are moving along their boundaries with a relative constant velocity v. Due to interaction between the surface spins there is a permanent energy flow and the system is in a steady state which is far from equilibrium. The problem is treated analytically in the limit $v = \infty$ (in one dimension, as well as in two dimensions for large-q values) and for v and q finite by Monte Carlo simulations in two dimensions. Exotic nonequilibrium phase transitions take place, the properties of which depend on the type of phase transition in equilibrium. When this latter transition is of first order, a sequence of second- and first-order nonequilibrium transitions can be observed when the interaction is varied [1].

[1] F. Iglói, M. Pleimling, and L. Turban, arXiv:1010.0738.

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