

Magnetic reordering in the vicinity of a ferromagnetic/antiferromagnetic interface

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Abstract.

The magnetic arrangement in the vicinity of the interface between a ferromagnet and an antiferromagnet is investigated, in particular its dependence on the exchange couplings and the temperature. Applying a Heisenberg model, both sc(001) and fcc(001) lattices are considered and solved by a mean field approximation. Depending on the parameter values a variety of different magnetic configurations emerge. Usually the subsystem with the larger ordering temperature induces a magnetic order into the other one (magnetic proximity effect). With increasing temperature a reorientation of the magnetic sublattices is obtained. For coupled sc(001) systems both FM and AFM films are disturbed from their collinear magnetic order, hence exhibit a similar behavior. This symmetry is absent for fcc(001) films which, under certain circumstances, may exhibit two different critical temperatures. Analytical results are derived for simple bilayer systems.

Keywords

Spectroscopy, Neural Network, State Physics, Complex System, Nonlinear Dynamics