

The Spin Reorientation Transition and Phase Diagram of Ultrathin Ferromagnetic Films

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Magnetic order in ultrathin ferromagnetic films is very complex due to the competition between exchange and dipolar interactions on different length scales, together with a strong influence of shape and magnetocrystalline anisotropy of the sample. In view of this complexity, theoretical work on simplified models and computer simulations are essential for rationalizing and guiding new experimental work.

In this talk we present recent Monte Carlo results of a two dimensional Heisenberg model for ultrathin films with perpendicular anisotropy. A complete phase diagram is obtained as a function of anisotropy and temperature, spanning a wide range of behaviors. We also observe and characterize a line of Spin Reorientation Transitions. These results are discussed in relation with experimental findings in different ultrathin films.