

On the Modeling of Domain-Wall Structures in Ferromagnets

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Abstract

A magnetic domain is a region of a saturated ferromagnet where, at a given time, the magnetization, a unit vector, has constant direction. Adjacent domains are separated by thin zones where the magnetization direction undergoes large spatial changes; these zones can be modeled as sharp interfaces, the domain walls. Magnetic domains and their walls are collectively referred to as domain-wall structures.

In my talk, I shall present briefly a new mathematical model for these microstructures, which is exposed in full detail in [1], and discuss why this model differs both in predictions and, more important, in concept from other previously proposed models.

[1] P. Podio-Guidugli and G. Tomassetti, On the Evolution of Domain Walls in Ferromagnets. Submitted, 2003.