



PHYSICS COLLOQUIUM

Topological Defects in Nanomagnets



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Abstract: Formation of magnetic domains in a macroscopic ferromagnet is a familiar phenomenon caused by a competition between local and long-range forces. The physics of domains becomes drastically different in nanosized magnets. In particular, domain walls in magnetic nanowires are composite objects containing a few elementary topological defects: vortices with integer and fractional winding numbers. Dynamics of such domain walls can be reduced to the motion of these “elementary particles”. A nonzero skyrmion charge of a vortex strongly influences the dynamics of composite domain walls.

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