

Theory of Condensed Matter: Hard Condensed Matter

May 28, 2019 at 2 p.m.
Galilei Room, 01-128 (Staudinger Weg 9)

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Magnetic skyrmions at critical coupling

In a recent mathematical study of a family of models for magnetic skyrmions in the plane a critical choice of couplings was found where the models admit infinitely many explicit solutions [1]. These solutions satisfy first order Bogomol'nyi solutions and their energy is given in terms of their degree. The explicit solutions are given in terms of an arbitrary holomorphic function. The simplest solutions are the basic Bloch and Néel skyrmions, but we also exhibit distorted and rotated single skyrmions as well as line defects, and configurations consisting of skyrmions and anti-skyrmions. Away from critical coupling I will give some examples of explicit axially symmetric solutions and an expression for their energy.

[1] Bruno Barton-Singer, Calum Ross, Bernd J Schroers, <https://arxiv.org/abs/1812.07268>

All interested are cordially welcome!