



Weekly Seminar

A theory of skyrmion crystal formation

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Abstract

In this talk, I will first review our current understanding of skyrmion crystal formation. Then I will present a generic theory about skyrmion crystal (SkX) formation and the fascinating thermodynamic behaviours in chiral magnetic thin films. We will see that a chiral magnetic film can have many metastable states with an arbitrary skyrmion density up to a maximal value when a parameter κ measuring the relative Dzyaloshinskii-Moriya interaction (DMI) strength is large enough. We will explain why a film prefers a stripy state, such as a helical state, at a low field, and an SkX around an optimal field when κ is above a critical value. Decrease of κ value explains why SkXs become metastable at low temperature in most skyrmion systems.

About the speaker

王向荣, 香港科技大学终身教授; 1984年毕业于武汉大学物理系; 1990年在美国罗彻斯特大学 (University of Rochester) 获博士学位。

研究方向: 凝聚态理论, 目前研究领域包括自旋电子学, 拓扑态及其动力学, 金属-绝缘体相变, 及非线性动力学。