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Unconventional magnetic states and defects

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Propositions

accompanying the dissertation

UNCONVENTIONAL MAGNETIC STATES AND DEFECTS

1. Combining phenomenological and microscopic analyses with analytical and numerical methods, one acquires a fresh view on problems (Chapter 1).
2. In ferromagnetic thin films, an interplay between magnetostatic interactions and single-ion magnetic anisotropy stabilizes Skyrmions, which are resilient to inclined magnetic fields (Chapter 2).
3. Non-collinear antiferromagnets can host Skyrmions – compact particles in three spatial dimensions that are conceptually different from Skyrmion strings in ferromagnets (Chapter 3).
4. A detailed microscopic description of interactions between localized electrons sheds light on magnetic anisotropy of materials (Chapter 4).
5. Magnetization reversals can occur through a sequence of metastable antiferromagnetic phases (Chapter 5).
6. PhD resembles a marathon, wherein consistency and self-awareness are your best friends. However, remember that your actual friends are also your best friends during the PhD journey. Beer-plus-patat pitstops are as crucial as the academic race itself.
7. You should not fear losing the joy of living in the Netherlands when it rains for several days. You will soon regain it when you see the "15% korting" sticker on your favorite soap.

Evgenii Barts