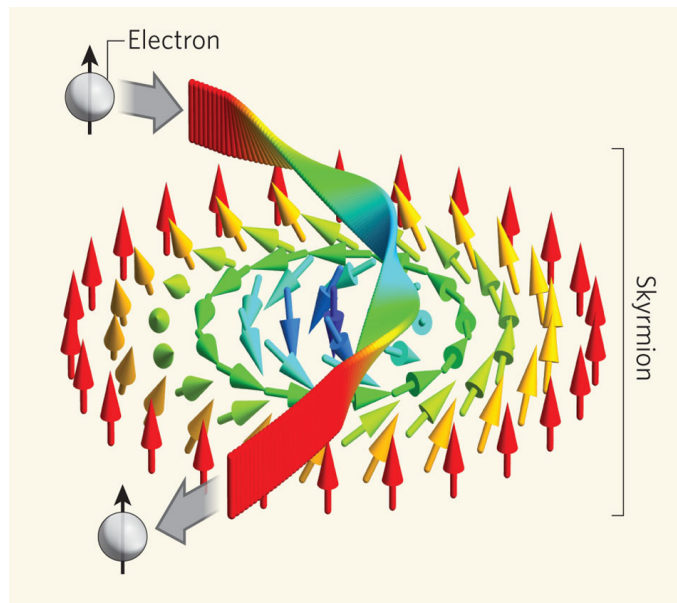


Whirls in magnets: from skyrmions to magnetic monopoles

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In magnets lacking inversion symmetry, topologically quantized magnetic whirls, so-called skyrmions, form due to spin-orbit interactions. Skyrmions are tiny, stable, couple extremely efficiently to electric currents and can be manipulated by small forces. They are therefore promising candidates for, e.g., future magnetic memories.

The coupling of skyrmions to electrons arises from Berry phases, which can efficiently be described by an artificial electromagnetic field. We investigate how the topology of skyrmion phase can be changed by singular magnetic defects which can be identified as emergent magnetic monopoles.