

# Gauge Theory and Dynamics of Chiral Skyrmions

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This talk has two, related parts. In the first, I review how mathematical models of chiral magnetic skyrmions can be written in terms of a non-abelian gauge field which is determined by the DMI term. In this formulation, one can identify parameter values where the model is integrable and where infinitely many solutions can be written down explicitly<sup>1,2</sup>. This reveals a surprising diversity of possible solutions for any given DMI term. The second part of the talk is about the current-driven dynamics of magnetic skyrmions and based on previous<sup>3</sup> and recent work<sup>4</sup>. Building on a geometrical interpretation of the Thiele approximation, I discuss the remarkable dependence of a chiral skyrmion's response to an applied Zhang-Li torque on the skyrmion's topology, orientation and scale.

## References

- [1] Bernd Schroers, Gauged Sigma Models and Magnetic Skyrmions, SciPost 7, 030 (2019)
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- [4] Bernd Schroers and Thomas Winyard, Internal Excitations in Chiral Skyrmion Dynamics, in preparation.