

# School of Physics and Astronomy

## COLLOQUIUM

### Topological Spintronics: Skyrmions and Other Beasts



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Skyrmions are topologically protected spin textures, which are ideal candidates for memory bits in future spintronic devices for information storage and processing. However, skyrmions in ferromagnets have some intrinsic difficulties, which must be overcome to use them for spintronic applications, such as the inability to move strictly along electric current due to skyrmion Hall effect. I will discuss how to work around this problem by using instead of skyrmions different anisotropic topological objects – antiskyrmions, recently observed in systems with anisotropic Dzyaloshinskii-Moriya interaction. I will explain their current-driven dynamics in both ferromagnets and antiferromagnets based on the spin transformations between skyrmion and antiskyrmion. Yet as another solution to eliminate the skyrmion Hall effect, I will also talk about skyrmions in antiferromagnetic materials. I will demonstrate how they can be stabilized and manipulated at finite temperatures. Finally, I will talk about bimerons, a pair of two merons that can be understood as the in-plane magnetized version of a skyrmion.

Date: Wednesday 7 August 2019

Time: 2pm

Venue: L1, Seminar Room 107, 10 College Walk, Clayton

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