

Abstract Submitted
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Antiferromagnetic

skyrmions¹

OLEG TRETIAKOV, JOSEPH BARKER, IMR, Tohoku University — Skyrmions are topologically protected entities in magnetic materials which have the potential to be used in spintronics 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 straight along current. We show that skyrmions can also be stabilized and manipulated in antiferromagnetic materials. An antiferromagnetic skyrmion is a compound topological object with a similar but of opposite sign spin texture on each sublattice, which e.g. results in a complete cancelation of the Magnus force. We find that the composite nature of antiferromagnetic skyrmions gives rise to different dynamical behavior, both due to an applied current and temperature effects.

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