**Lifetime of Skyrmions in Cuprates and Other Layered Materials**[1]

LIUFEI CAI, EUGENE CHUDNOVSKY, DMITRY GARANIN, CUNY Lehman College, CUNY LEHMAN COLLEGE TEAM — Collapse of a skyrmion due to the discreteness of a crystal lattice in isotropic two-dimensional ferro- and antiferromagnets has been studied analytically and by numerical solution of equations of motion for up to 2000×2000 classical spins on a square lattice coupled via Heisenberg exchange interaction. Excellent agreement between analytical and numerical results has been achieved. The lifetime of the skyrmion scales with its initial size, $\lambda_0$, as $(\lambda_0/a)^5$ in ferromagnets and as $(\lambda_0/a)^{2.15}$ in antiferromagnets, with $a$ being the lattice parameter. This makes antiferromagnetic skyrmions significantly shorter lived than ferromagnetic skyrmions.

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