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Dynamics of an Insulating Skyrmion under a Temperature Gradient JIADONG ZANG, Johns Hopkins Univ, LINGYAO KONG, Fudan University — Skyrmion is a topological spin texture in which local magnetic moments wrap the unit sphere an integer number of times. The study of Skyrmion dynamics is not only an important physics issue, but also application oriented. On the other side, dynamics of the insulating Skyrmions is also an interesting subject. In this talk, I will briefly review my previous work on current driven Skyrmion motion based on an emergent gauge field. We study the Skyrmion dynamics in thin films under a temperature gradient. Our numerical simulations show that both single and multiple Skyrmions in a crystal move towards the high temperature region, which is contrary to particle diffusion. Noticing a similar effect in the domain wall motion, we employ a magnon pulling mechanism to explain this counterintuitive phenomenon. Unlike the temperature driven domain wall motion, the Skyrmion's topological charge plays an important role, and a transverse Skyrmion motion is observed. Our theory turns out to be in agreement with numerical simulations, both qualitatively and quantitatively.

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[2] Lingyao Kong, and Jiadong Zang, Phys. Rev. Lett. **111**, 067203 (2013).

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