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Ground State Hedgehog Skyrmion Bubbles in Ultrathin Heterostructures with Interfacial Dzyaloshinskii-Moriya Interactions[1]
JAVIER PULECIO, National Institute of Standards and Technology, ALE HRABEC, CNRS Universits Paris-Sud, KATHARINA ZEISSLER, University of Leeds, RYAN WHITE, National Institute of Standards and Technology, YIMEI ZHU, Brookhaven National Laboratory, CHRISTOPHER MARROWS, University of Leeds — Isolating magnetic skyrmions in their ground state, mapping the topology and understanding the related topological effects is of great interest. Here we experimentally investigate the effect of dipolar energy from interlayer coupling on the remanent spin textures found at room temperature for interfacial DMI multilayers of $[\ \mathrm{Pt} \setminus \mathrm{Co} \setminus \mathrm{Ir}\ ]_{\times N}$. The total dipolar energy is modified by increasing the number of layer repetitions N which result in different phases of chiral magnetic textures [1]. The films exhibit isolated hedgehog skyrmion bubble phase, as well as a sub 100 nm labyrinth domain phase with cycloidal homochiral Néel walls in zero field. By tuning the total dipolar energy, stabilize the skyrmion bubble phase as a ground state. The circular skyrmion bubbles in continuous films can be inflated to various sizes and take up an irregular shape above a critical size [2]. [1] Pulecio, J. F. *et al.* Hedgehog Skyrmion Bubbles in Ultrathin Films with Interfacial Dzyaloshinskii-Moriya Interactions, 12. Materials Science. ArXiv ID: 1611.06869 [2] Pulecio, J. F. *et al.* Phase Transitions of Chiral Spin Textures via Dipolar Coupling in Multilayered Films with Interfacial DMI. ArXiv ID: 1611.00209

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