Abstract Submitted
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Observation of room-temperature skyrmion Hall effect. W. JIANG, Argonne National Laboratory, X. ZHANG, University of Hong Kong, P. UPADHYAYA, UCLA, W. ZHANG, Argonne National Laboratory, G. YU, UCLA, M. JUNGFLEISCH, F. FRADIN, J. PEARSON, Argonne National Laboratory, Y. TSERKOVNYAK, K. WANG, UCLA, O. HEINONEN, Argonne National Laboratory, Y. ZHOU, University of Hong Kong, SUZANNE TE VELTHUIS, A. HOFFMANN, Argonne National Laboratory — The realization of room-temperature magnetic skyrmions is key to enabling the implementation of skyrmion-based spintronics. In this work, we present the efficient conversion of chiral stripe domains into Néel skyrmions through a geometrical constriction patterned in a Ta/CoFeB/TaO_x trilayer film at room temperature. This is enabled by an interfacial Dzyaloshinskii-Moriya interaction, and laterally divergent current-induced spin-orbit torques [1]. We further show the generation of magnetic skyrmions solely by the divergent spin-orbit torques through a nonmagnetic point contact. By increasing the current density, we observe the skyrmion Hall effect – that is the accumulation of skyrmions at one side of the device. The related Hall angle for skyrmion motion is also revealed under an *ac* driving current. Financial support for the work at Argonne came from Department of Energy, Office of Science, Basic Energy Science, Materials Sciences and Engineering Division, work at UCLA was supported by TANMS. Reference: [1] W. Jiang, et al., Science, 349, 283 (2015).

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