Abstract Submitted
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Skyrmion Hall Effect[1] A. HOFFMANN, MSD, Argonne National Laboratory, W. JIANG, Argonne National Laboratory and Tsinghua University, X. ZHANG, Y. ZHOU, The Chinese University of Hong Kong, G. YU, K.L. WANG, University of California, Los Angeles, X. WANG, X. CHENG, Bryn Mawr College, W. ZHANG, M.B. JUNGFLEISCH, J.E. PEARSON, O. HEINONEN, S.G.E. TE VELTHUIS, MSD, Argonne National Laboratory — Theory indicates a large transverse component for the motion of magnetic skyrmions, the skyrmion Hall effect, due to the topological charge resulting in a net gyrotropic force. Here we demonstrate for electric current driven magnetic skyrmions the direct observation of this transverse motion using magneto-optic Kerr effect imaging.[2] We observe that the skyrmion Hall angle varies continuously from zero just above the depinning current threshold until $\approx 30^\circ$ for current densities up to 10^8 A/cm^2. This variation of the skyrmion Hall angle indicates the changing competition between pinning and gyrotropic forces as the skyrmion motion transitions from the creep to the flow regime. The maximum observed Hall angle is in good agreement with theory for rigid skyrmion motion.

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[2]W, Jiang *at al.*, Nature Phys., doi:10.1038/nphys3883 (2016).

Axel Hoffmann
MSD, Argonne National Laboratory

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