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Chiral Skyrmion Hall effect in Antiferromagnets MATTHEW DANIELS, RAN CHENG, Carnegie Mellon University, JIANG XIAO, Fudan University, DI XIAO, Carnegie Mellon University — We study the interaction between magnetic skyrmions and spin wave currents in antiferromagnetic (AFM) insulators. Micromagnetic simulations reveal that magnon-skyrmion scattering in AFMs is dependent on the chirality of the spin wave, a degree of freedom unique to easy-axis AFMs. We also find nontrivial dynamical differences between circularly and linearly polarized waves incident upon AFM skyrmions in simulation. We characterize the resulting chiral magnon Hall effect using the O(3) nonlinear sigma model, and we elucidate the corresponding chiral skrymion Hall effect as arising from certain magnon spin currents.

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