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**Interaction of magnon current with a domain wall in an antiferromagnet**[1] SE KWON KIM, OLEG TCHERNYSHYOV, Johns Hopkins University, YAROSLAV TSERKOVNYAK, University of California, Los Angeles
— We study the dynamics of magnons in an easy-axis antiferromagnet in the presence of a domain wall (DW). As in a ferromagnet [1], magnons pass through a DW with a tanh profile with no back scattering. An important difference is that in an antiferromagnet a magnon can have spin $+1$ or $-1$ along the easy axis, whereas in a ferromagnet a magnon's spin is always opposite to the direction of magnetization. We find that magnons in an antiferromagnet pass through a tanh domain wall with their spin reversed and transfer two units of angular momentum to the DW. A magnon spin current can be generated by breaking the degeneracy of the two branches of spin waves in one domain, e.g., by irradiating it with circularly polarized microwaves. Uniform magnetization accumulated on the DW as a result of magnon spin inversion will cause the staggered magnetization to precess. We present a quantitative model incorporating magnon spin current in the equations of motion written in terms of the wall's collective coordinates [2]. The analytical results are confirmed by numerical simulations.

[1] P. Yan, X. S. Wang, and X. R. Wang, Phys. Rev. Lett. **107**, 177207 (2011).
[2] E. G. Tveten *et al.*, Phys. Rev. Lett. **110**, 127208 (2013)

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