

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Angle-dependent 2D domain wall motion with Dzyaloshinskii-Moriya interaction**<sup>1</sup> JIN LAN, JIANG XIAO<sup>2</sup>, Department of Physics, Fudan University, Shanghai 200433, China, RUQIAN WU<sup>3</sup>, Department of Physics and Astronomy, University of California, Irvine, CA 92697-4575 — We explore the dependence of the 2D domain wall motion on the incident angle of magnons (spin waves), in the presence of the Dzyaloshinskii-Moriya interaction (DMI). It is found that the domain wall may either be dragged toward or be pushed away from the magnon source, depending on the incident angle of the magnons. This is mainly contributed by the linear momentum absorbed or released by the DMI when magnons pass through the domain wall. In addition, the total internal reflection of magnons beyond a critical incident angle from one side also contributes to the pushing effect. This adds a new mechanism for the magnetic domain wall motion.

<sup>1</sup>Work in Fudan University was supported by the 1000-talent fund and the special funds for the Major State Basic Research Project of China (2014CB921600).

<sup>2</sup>Corresponding author.

<sup>3</sup>Corresponding author.

Ruqian Wu  
Department of Physics and Astronomy,  
University of California, Irvine, CA 92697-4575

Date submitted: 14 Nov 2014

Electronic form version 1.4