

Description of Additional Supplementary Files

Supplementary Movie 1: Simulation of the movement of a DW under the action of the SAW over four cycles of the oscillation of the SAW. In the plot below, there is a representation of the evolution of the effective fields and the normalized components of magnetization versus distance in nanometers. The amplitude of the SAW is 70 ppm.

Supplementary Movie 2: Normalized x-component of the magnetization and z-component of the field over several cycles of the SAW. The GIF covers the evolution between an initial position of the DW (black line DW0) and a final position of the DW (DWF). The amplitude of the SAW is 70 ppm.

Supplementary Movie 3: This is a movie like Movie 2, but we divide the DW into three parts. It becomes clear that most of the effect occurs in the middle of the DW. The amplitude of the SAW is 70 ppm.

Supplementary Movie 4: Evolution of Vortex Domain Walls under the action of many cycles of the SAW. The amplitude of the SAW is 70 ppm.

Supplementary Movie 5: Movement of a very narrow domain wall (width in the order of 100 nm) under the action of a SAW travelling from left to right, showing that there is movement of the DW at a reduced speed, even though this movement is in the opposite direction to the SAW propagation. The mechanism of movement for very narrow walls and a large amplitude of the SAW is different from the one presented in this work and will be studied in future work. The amplitude of the SAW is 70 ppm.