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Model of the magnetostriction of planar domain walls in ferromagnets and antiferromagnets[1] MIKHAIL INDENBOM, JIAN-JUN LI, Laboratory of magnetism of Brittany CNRS, Brest, France — Recently we have shown that all details of magnetisation of magnetic thin films and multilayers deposited onto thin substrates can be revealed by simultneous measurements of the substrate flexion and torsion. This technique is complimentary to the ordinary vector magnetometer being capable to resolve the signal from a ferromagnetic (F) layer with the magnetisation negligible compared to one of the other layers or even from an antiferromagnetic (AF) layer and to study, for example, the formation of planar domain walls in a spring-magnet F/F bilayer or an exchange-bias F/AF bilayer. In the current presentation we are using a 1D model of the planar domain wall in order to demonstrate a variety of magnetostrictive signals wich can be obtained in such systems. For clarity we neglect the thickness, magnetic anisotropy and magnetostriction of the control F-layer (an ideal permalloy). We have calculated how spin rotation induced in this layer by the applied magnetic field penetrates into the magnetostrictive AF or F layer and forms the planar domain wall.

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