

# Determination of exchange and rotational anisotropies in $\text{Co}_2\text{FeSi}/\text{IrMn}$ exchange coupled structures using broadband ferromagnetic resonance

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In ferromagnetic (FM)/antiferromagnetic (AFM) bilayer systems the exchange bias (EB) is the most spectacular phenomenon resulting in a shift of a hysteresis of the exchange anisotropy field  $H_{EB}$ . However, another phenomenon related to EB—rotational anisotropy—has been far less recognized. The rotatable anisotropy field  $H_{RA}$  is a field that follows the macroscopic motion of the magnetization, decreasing the resonance field in all directions. In this contribution, we present broadband VNA-FMR measurements of both  $H_{EB}$  and  $H_{RA}$  in  $[\text{Co}_2\text{FeSi}/\text{IrMn}]_3$  structures comprising three bilayers with distinct  $H_{EB}$  of  $\sim 20 - 70 - 220$  Oe, respectively. The aim of the study is to find correlation between  $H_{EB}$  and  $H_{RA}$ . It appears that  $H_{RA}$  scales  $\propto H_{EB}$ , contrary to our expectations.