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Noncollinear ferromagnetic easy axes in spin valves induced by oblique deposition ROBERTO RODRIGUEZ, Pontificia Universidad Católica de Chile, THIAGO BUENO, DANIEL PARREIRAS, Universidade Federal de Minas Gerais, Brazil, SEBASTIAN MICHEA, Pontificia Universidad Católica de Chile, MARIO ARAUJO, WALDEMAR MACEDO, Laboratório de Física Aplicada, Centro de Desenvolvimento da Tecnologia Nuclear, Belo Horizonte, MG, Brazil, KLAUS KRAMBROCK, ROBERTO PIANAGO, Universidade Federal de Minas Gerais, Brazil — In this work we investigate the magnetic properties of Py/Ru/FeCo/IrMn spin valves grown by oblique magnetron sputtering. The in-plane angular dependence of the ferromagnetic resonance (FMR) was used to obtain the relevant magnetic anisotropies. As we show, the deposition geometry employed in the sample preparation setup can be used to induce noncollinear easy axes of the ferromagnetic (FM) layers of the spin valve. We could directly observe the non-collinearity on the symmetry shift of the angular dependence of the FMR resonances fields of the two FM layers. The observations of the present study suggest that, by combining oblique deposition and appropriate angles of incidence of the deposition flux, the uniaxial (and unidirectional) axes of individual FM layers can be precisely engineered in spin valve fabrication.

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