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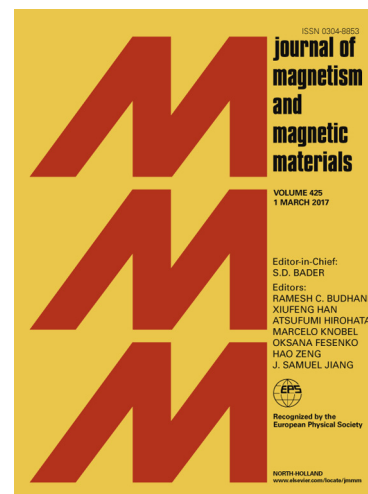
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## heavy metal/ferromagnet bilayers with in-plane anisotropy

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## Abstract

The dynamics of domain wall driven by the spin-orbit torques is theoretically studied in the heavy metal/ferromagnet bilayer with Dzyaloshinskii-Moriya interaction (DMI) and in-plane magnetic anisotropy. Based on the Walker profile, we infer that DMI has a selectivity for the chirality of head-to-head (tail-to-tail) static wall. By analyzing the dynamic equations obtained from the collective coordinates methods, we find that there exists a switching or a hysteresis of the polarity of wall in the low-current regime. In the presence of DMI, the wall can keep sustained propagation which velocity saturates for high current and is proportional to the strength of DMI. Furthermore, the DMI makes the adjacent walls possess the same chirality and move in the same direction.

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