

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Planar spin-transfer device with dynamical polarizer and analyzer

YAROSLAW BAZALIY, ANTON KRAVCHENKO — The behavior of the planar spin-transfer devices with monodomain magnetic layers can be described by the macrospin Landau-Lifshitz-Gilbert (LLG) equation with spin-transfer terms. The LLG description of a device with two layers is simplified after applying the overdamped, large easy-plane anisotropy approximation. A decrease of the magnetic layer thickness asymmetry creates a transition from the conventional polarizer-analyzer (“fixed layer – free layer”) operation regime to the regime of the nearly identical magnets. Here electric current leads to a “Slonczewski windmill” dynamic state, rather than producing the magnetic switching. The “windmill” precession state of a device with two free layers was investigated by numerical solution of the LLG equation.

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Date submitted: 07 Dec 2010

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