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Skyrmion Dynamics in Co/Pt Bilayers Using Spin Transfer Torque JENNIFER GRAB, ALISON RUGAR, DAVID MACNEILL, Cornell University, GIOVANNI FINOCCHIO, University of Messina, ROBERT BUHRMAN, DAN RALPH, Cornell University — Finding efficient methods to write and read individual skyrmions under ambient conditions is an important first step toward realizing skyrmion-based applications, such as high density information storage and racetrack memory. Of recent interest experimentally are heavy metal /ferromagnet bilayers with a strong interfacial Dzyaloshinskii-Moriya interaction and perpendicular magnetic anisotropy (PMA), which favor the formation of helical spin textures. Micromagnetic simulations of these materials suggest that an out of plane spin polarized current could be used to excite skyrmion dynamics and possibly create isolated skyrmions. In this project, we study a spin-valve-like device consisting of a PMA nanopillar on top of an extended Co/Pt bilayer. The nanopillar generates a spin polarized current, which is expected to locally reverse the magnetization of the film underneath the pillar via spin transfer torque. We report measurements of the DC current and field dependence of the pillar resistance. Effects local to the pillar are isolated by independently monitoring the magnetization state of the extended bilayer. We attempt to measure the emission frequency of dynamical modes and compare it to theory.

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