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Influence of Electrode Structure on Switching Characteristics in Nanopillar Spin Valves P. M. BRAGANCA, O. OZATAY, A. G. F. GARCIA, J. C. SANKEY, N. C. EMLEY, D. C. RALPH, R. A. BUHRMAN, Cornell University — We examine the effect spin scattering within the electrodes of a spin-valve nanopillar has on spin torque and damping within the structure. Devices were fabricated with the free layer adjacent to either the top or bottom electrode and with Au or Pt top electrodes. Macrospin simulations, when compared to pulsed current switching experiments, indicate that gold electrode samples of either free layer orientation have similar switching parameters, while devices with the free layer adjacent to a top platinum electrode exhibit lower spin torque and larger damping than Au capped devices, in agreement with spin accumulation [1, 2] and spin pumping [3] models. However, by placing the free layer opposite a platinum cap, the largest values for spin torque and damping were achieved, which was an unexpected result. In addition, we will discuss how placement of the free layer close to the bottom electrode induces effects such as fixed layer switching and microwave excitations in zero effective field, which are not seen in the opposite configuration. [1] J. Manschot, A. Brataas, G. E. W. Bauer, Appl. Phys. Lett. **85**, 3250 (2004). [2] A. A. Kovalev, A. Brataas, G. E. W. Bauer, Phys. Rev. B **66**, 224424 (2002). [3] Y. Tserkovnyak, A. Brataas, G. E. W. Bauer, Phys. Rev. B. **67**, 140404 (2003).

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