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Control of Propagating Spin Waves via Spin Transfer Torque in a Metallic Bilayer Waveguide[1] KYONGMO AN, Department of Physics, University of Texas, Austin, DANIEL BIRT, Department of Physics, University of Texas, Austin and Texas Material Institute, University of Texas, Austin, CHI-FENG PAI, Cornell University, Ithaca, KEVIN OLSSON, Department of Physics, University of Texas, Austin, DANIEL RALPH, Cornell University, Ithaca and Kavli Institute at Cornell, Cornell University, Ithaca, ROBERT BUHRMAN, Cornell University, Ithaca, XIAOQIN LI, Department of Physics, University of Texas, Austin and Texas Material Institute, University of Texas, Austin — We investigate the effect of a direct current on propagating spin waves in a CoFeB/Ta bilayer structure. Using the micro-Brillouin light scattering technique, we observe that the spin wave amplitude may be attenuated or amplified depending on the direction of the current and the applied magnetic field. Our work suggests an effective approach for electrically controlling the propagation of spin waves in a magnetic waveguide and may be useful in a number of applications such as phase locked nano-oscillators and hybrid information processing devices.

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