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Current Control of Magnetic Anisotropy via Strain in a CoFeB Waveguide[1] KYONGMO AN, XIN MA, Department of Physics, University of Texas, Austin, Texas 78712, USA, CHI-FENG PAI, Cornell University, Ithaca, New york 14853, USA, JUSANG YANG, KEVIN OLSSON, JAMES ERSKINE, ALLAN MACDONALD, Department of Physics, University of Texas, Austin, Texas 78712, USA, DANIEL RALPH, ROBERT BUHRMAN, Cornell University, Ithaca, New york 14853, USA, XIAOQIN LI, Department of Physics, University of Texas, Austin, Texas 78712, USA — We demonstrate that in-plane charge current can effectively control the spin precession resonance in an Al_2O_3/CoFeB/Ta heterostructure. Brillouin Light Scattering (BLS) was used to detect the ferromagnetic resonance field under microwave excitation of spin waves at fixed frequencies. Such control originates from the modified in-plane uniaxial magnetic anisotropy field H_k, which changes symmetrically with respect to the current direction. Numerical simulation suggests that the anisotropic stressintroduced by Joule heating plays an important role in controlling H_k. The results provide new insights into current manipulation of magnetic properties and have broad implications on spintronic devices.

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