

Voltage control of ferromagnetic resonance in permalloy stripes on piezoelectric substrates

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Voltage tuning of ferromagnetic resonance (FMR) is of interest for applications in voltage-tunable microwave devices. In this study, we report on the resonant excitation of spin waves by a radio frequency current in a 20 nm thick stripe ($40 \times 200 \mu\text{m}^2$) of $\text{Ni}_{80}\text{Fe}_{20}$ on a piezoelectric PMN-PT substrate. The FMR signal results from the spin-torque diode effect being a product of spin-transfer torque and anisotropy magnetoresistance. The application of electric field to the PMN-PT substrate shifts FMR frequency due to changes of magnetoelastic anisotropy in the permalloy film.

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