

PROPAGATION, TUNNELING AND PHASE SHIFT OF SPIN WAVES  
AT A MAGNETIC FIELD INHOMOGENEITY

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We show experimentally and by numerical simulation, that spin waves propagating in a magnetic film can pass through a region of a magnetic field inhomogeneity or, alternatively, can be reflected by this region depending on the sign of the inhomogeneity. If the region is reflecting and narrow enough, spin wave tunneling takes place. We investigate the tunneling mechanism and demonstrate that it has a magnetic dipole origin. While travelling through a region of inhomogeneous field, spin waves undergo a phase shift. We show, that this can be used for designing phase shifters and spin-wave logic elements.