

# **Coupling between spin waves in planar ferromagnetic nanostructures toward exploitation in magnonic devices**

K. Szulc,<sup>1</sup> P. Graczyk,<sup>2</sup> M. Mruczkiewicz,<sup>3</sup> S. Mamica,<sup>1</sup> M. Zelent,<sup>1</sup>  
P. Gruszecki,<sup>1</sup> J. Rychły,<sup>1</sup> J. W. Kłos,<sup>1</sup> and M. Krawczyk<sup>1</sup>

<sup>1</sup>*Faculty of Physics, Adam Mickiewicz University, Uniwersytetu  
Poznanskiego 3, Poznan, Poland*

<sup>2</sup>*Institute of Molecular Physics, Polish Academy of Sciences,  
M. Smoluchowskiego 17, 60-179 Poznan, Poland*

<sup>3</sup>*Institute of Electrical Engineering, Slovak Academy of Sciences,  
841 04 Bratislava, Slovakia*

Spin waves span a broad range of frequencies from hundreds of MHz up to tens of GHz with the respective wavelengths ranging from micrometers to nanometers. Moreover, their spectra can be tuned by the external fields and depend on the magnetization configuration. These properties are desirable in microwave and information processing technologies and are in focus of our investigations in magnonics. We show magnonic band structure formation and opening magnonic band gaps with different kinds of periodicity in thin ferromagnetic films introduced by etching holes, structural modifications, magnetic domain formation and dynamic dipolar coupling. We continue to demonstrate the effect of non-reciprocity in the spin wave spectra and to propose directional couplers, transduction between acoustic and spin waves, and the rout to control the spin wave propagation in the film plane and along the vertical direction.

## **References:**

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