

# Complete band gap opening in the spin-wave spectrum of two-dimensional bi-component magnonic crystals

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Two dimensional (2D) magnonic crystals (MCs) with tunable band gap in the spin-wave spectrum have potential applications in different types of magnonic devices, such as microwave resonators, spin-wave filters or switches, and current-controlled delay lines. To examine possibilities of the magnonic band gap opening we employ the plane-wave method (PWM) and solve linearised Landau-Lifshitz equation together with magnetostatic Maxwell equations [1]. We study spin-wave propagation in 2D bi-component MCs of finite thickness consisting of the scattering centres of elliptical cross section distributed in ferromagnetic matrix in sites of a square or hexagonal lattice with the in-plane structure distorted (squeezed) in one direction. We show that such squeezing leads to the spin-wave spectrum very sensitive to external magnetic field which can be used to opening / closing complete magnonic gaps.

## References:

[1] S. Mamica, *et al.*, Adv. Cond. Mat. Phys. 2012, 161387 (2012).

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