

# Graded index spin wave fibers

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Spin waves (SWs) are promising information carriers that can be used in designing of a new class of efficient and low energy consuming information processing devices – magnonic units. However, before their practical realization and commercialization, the development of structures for efficient SWs guiding is required. We propose to exploit continuous variation of the SW's refractive index (SWRI). Using iso-frequency dispersion contours analysis supported by micromagnetic simulations we study the SW beam propagation in thin ferromagnetic films with slowly varied in space SWRI. Then, we use acquired knowledge to study influence of SWRI variation at the edges of the narrow ferromagnetic stripes on the SW transmission. Such systems can be considered as a magnonic graded-index waveguides, which have improved properties required for magnonic applications.

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