PHOTONIC-MAGNONIC CRYSTALS

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In this talk we present results of theoretical investigation of new type of periodic structures composed of alternated dielectric and magnetic materials named photonic-magnonic crystals which are characterized by forbidden gaps in the spectra of electromagnetic waves and spin waves propagating through photonic-magnonic crystal [1 – 3].

Analysis of transmission spectra for both electromagnetic and spin waves has been done.

Faraday and Goos-Haenchen effects [4, 5] for electromagnetic waves propagated through one-dimensional photonic-magnonic crystal has been studied.

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[2] J. W. Kłos, M. Krawczyk, Y. S. Dadoenkova, N. N. Dadoenkova, and I. L. Lyubchanskii, *Spin waves and electromagnetic waves in on-dimensional photonic-magnonic crystals.* IEEE Trans. Magn. 50, 2504404 (2014).

[3] Y. S. Dadoenkova, N. N. Dadoenkova, I. L. Lyubchanskii, J. W. Kłos, and M. Krawczyk. *Confined states in photonic-magnonic crystals with complex unit cell*. Journal of Applied Physics **120**, 073903 (2016).

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[5] Y. S. Dadoenkova, N. N. Dadoenkova, J. W. Kłos, M. Krawczyk, and I. L. Lyubchanskii. *Goos-Hänchen effect in light transmission through biperiodic photonic-magnonic crystals*. Physical Review A **96**, 043804 (2017).