Fano resonances in side-coupled magnonic crystal/rectangular YIG-resonator system

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MSSW propagation in the system consisting of 1D-magnonic crystal waveguide (MCW) and side-coupled rectangular YIG-resonator was studied. Such system can suuport Fano resonances [1]. On the other hand the considered structure can be viewed like MCW with side-coupled structural defect. We have shown that the MSSW transmitted characteristic (S_{21}) at YIG-resonator frequency f_R depends on position of this frequency with respect to frequency f_B of the Bragg resonances in MCW. If frequency f_R is located inside the magnonic gap ($f_R \approx f_B$) the $S_{21}(f_R)$ takes form corresponding to defect mode excitations – the amplitude of transmitted signal increase. Otherwise ($f_R \neq f_B$) the $S_{21}(f_R)$ characteristic takes the form of the resonance absorption.

References:

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