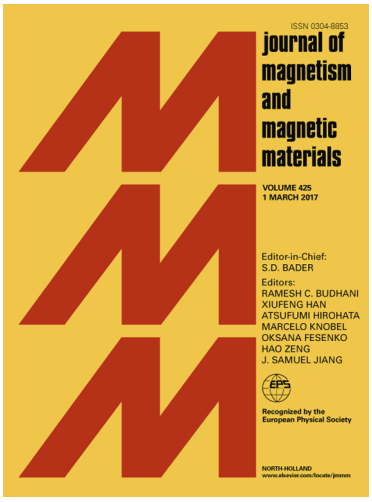

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Suppression of periodic spatial power transfer in a layered structure based on ferromagnetic films

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Abstract

The features of wave processes in a heterostructure based on two ferromagnetic films separated by a layer of non-magnetic dielectric layer have been investigated at different levels of the input signal power. It has been experimentally demonstrated using Brillouin light scattering set-up that at low input power it is transferred from one film to another along the length of the structure, which is typical for any spatially distributed coupled systems. At a certain level of input power the inhibition of periodic power transfer from one film to another is observed, therefore, the coupling between the films disappears. In order to explain this effect, we have developed the theory based on the model of two nonlinear equations for the amplitudes enveloping the signals in each film. Numerical calculation results are in a good agreement with experimental data.

Keywords: Ferromagnetic film, magnetostatic wave, coupled structure, nonlinear wave phenomena

2010 MSC: 78A30, 78A40

1. Introduction

In recent years, micro and nano structures based on magnetic materials has attracted widespread interest of researchers due to its potential use in a new

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