Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

**Interacting magnetic nanodisks pairs** JOAO PAULO SINNECKER, HELMUNT EDUARDO VIGO COTRINA, ERICO NOVAIS, Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro, Brasil, FLÁVIO GARCIA, Laboratorio Nacional de Luz Sincrotron, Campinas, Brasil, ALBERTO PASSOS GUIMARAES, Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro, Brasil — Nanodots with magnetic vortex configuration are considered as promising elements of recording media [1]. When vortices are excited from their equilibrium position and allowed to relax, they perform a motion called gyrotropic, with a characteristic frequency. When two magnetic disks are close to one another there arises a frequency splitting due to the dynamic interaction [1]. Expressions for the magnetic vortex excitation frequencies and coupling constants in a pair of coupled identical circular disks were obtained previously by Shibata et al. [2]. The goal of this work is to calculate analytically the frequency of the dynamic excitation of coupled vortices in a pair of disks with different radii, with the same thickness. We considered a magnetostatic interdot interaction using the linearized Thiele's equations of motion of the vortex core, neglecting the damping term. Through micromagnetic simulation, we have investigated the interaction of these pairs of nanodisks using a recently developed tool, the magnetic vortex echoes (MVE) [3]. An analytical model of the MVE is presented.

[1] H. Jung, et al. Sci. Rep. 59, 1-6 (2011).
[2] J. Shibata et al. Phys. Rev. B67, 224404 (2003).
[3] F.Garcia et al., Journal of Applied Physics (in press).

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Date submitted: 30 Nov 2012 Electronic form version 1.4