Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Thermally induced transparency for short spin wave pulses in yttrium iron garnet (YIG) films[1] CESAR LEONARDO ORDONEZ ROMERO, Physics Institute, UNAM, OLEG KOLOKOLTSEV, IVAN GOMEZ ARISTA, NASER QURESHI, CCADET, UNAM, GUILLERMO MONSIVÁIS GALINDO, HESIQUIO VARGAS HERNÁNDEZ, Physics Institute, UNAM — The compensation of spin wave propagation losses plays a very important role in the development of novel magnonic devices. Up to now, however, most of the known amplification methods present relative narrow frequency bandwidths due to their resonant nature. In this work, we present compensation of the propagation losses or pseudo-amplification of travelling spin waves by tailoring the bias magnetic field profile. The thermally-induced non-uniform profile of the magnetization introduced on an Yttrium Iron Garnet (YIG) thin film by a localized spot of a cw argon-ion laser creates the conditions to observe the complete compensation of the spin wave propagation losses. The spin wave evolution was mapped with a time and spaced resolved inductive magneto-dynamic prove system. The experiment was carried out using a uniform sample of single-crystal YIG film grown on a gallium-gadolinium garnet (GGG) substrate. The 2mm-wide, 20mm-long and 6microns-thick YIG strip was saturated with an external magnetic field enabling the set up for the propagation of magneto-static surface waves.

[1]This work was supported by the UNAM-DGAPA-PAPIIT IA100413.

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Date submitted: 14 Nov 2013 Electronic form version 1.4