

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Effects of heat current on magnetization dynamics** FRANCESCO ANTONIO VETRO, SYLVAIN BRECHET, JEAN-PHILIPPE ANSERMET, Ecole Polytechnique Federale de Lausanne, IPMC, station 3, 1015 Lausanne, Switzerland — The work is aimed at investigating the interplay between spin dynamics and heat currents in single-crystal Yttrium Iron Garnet (YIG). The irreversible thermodynamics for a continuous medium [1] predicts that a thermal gradient, in the presence of magnetization waves, produces a magnetic induction field, thus a magnetic analog of the well-known Seebeck effect. Time-resolved transmission measurements revealed a change in the attenuation of magnetization waves propagating along the thermal gradient when the gradient is reversed. This magnetic damping change can be accounted for by the Magnetic Seebeck effect [2]. In order to characterize this effect further, we have conducted studies on magnetization dynamic in YIG single crystal samples placed in various geometrical configurations, e.g. with YIG disks in which magnetic vortices might be present. Various magnetic resonance schemes were used, e.g. local probes and cavities.

[1] S. D. Brechet and J.-P. Ansermet, Eur. Phys. J. B, vol. 86, no. 7, pp. 1-19, Jul. 2013.

[2] S. D. Brechet, F. A. Vetro, E. Papa, S. E. Barnes and J.-P. Ansermet, Physical Review Letters 111, 8, 087205, Aug. 2013.

Francesco Antonio Vetro  
Ecole Polytechnique Federale de Lausanne,  
IPMC, station 3, 1015 Lausanne, Switzerland

Date submitted: 11 Nov 2014

Electronic form version 1.4