Abstract Submitted
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Subthermal-magnon-driven longitudinal spin Seebeck effect in yttrium iron garnets (YIG)[1] HYUNGYU JIN, STEPHEN BOONA, Department of Mechanical and Aerospace Engineering, The Ohio State University, Columbus, OH, ZIHAO YANG, ROBERTO MYERS, Department of Materials Science and Engineering, The Ohio State University, Columbus, OH, JOSEPH HEREMANS, Department of Mechanical and Aerospace Engineering, The Ohio State University, Columbus, OH — Since its discovery in 2008, the spin Seebeck effect (SSE) has intrigued many interesting research all around the world, which has led to the birth of a new field of research, called "spin-caloritronics". Of the two different experimental configurations used for detecting SSE, the longitudinal geometry (LSSE) seems to be generally accepted [1]. The yttrium iron garnet (YIG) / Pt bilayer structure has been most commonly used for LSSE experiments because absence of electrons in YIG excludes contaminations from other thermomagnetic effects. The dependence of the LSSE on YIG film thickness [2] and on temperature [3] have been reported, but not yet both together. Here we present experimental data on the temperature dependence of LSSE in Pt/YIG below room temperature in systems in which the thickness of YIG varies. Detailed discussion is given on the experimental results, with emphasis on the role of subthermal-magnons in the temperature dependence of LSSE in the YIG/Pt system.

[1] S. R. Boona et al., Energy Environ. Sci. 7, 885-910 (2014).
[2] A. Kehlberger et al., arXiv 1306.0784 (2013).
[3] K. Uchida et al., Phys. Rev. X 4, 041023 (2014).

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