

Abstract Submitted  
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**Magnon drag thermopower and thermomagnetic properties of single-crystal iron**<sup>1</sup> SARAH WATZMAN, HYUNGYU JIN, Department of Mechanical and Aerospace Engineering, The Ohio State University, Columbus, Ohio, USA, JOSEPH HEREMANS, Department of Mechanical and Aerospace Engineering and Department of Physics, The Ohio State University, Columbus, Ohio, USA — Lucassen et al. [1] demonstrate that magnon drag involves a spin-transfer mechanism closely related to the recently discovered spin-Seebeck effect. This talk will first present results of experiments mapping out the thermopower and magnetothermopower of single-crystal iron and prove that its thermopower is indeed dominated by magnon drag, as suggested by Blatt et al. in 1967 [2]. Measurements will then be presented on the magnetic field and temperature dependence of the full thermomagnetic tensor of iron's thermopower in the xxx, yxy, and xyz geometries (the first index gives the direction of the heat flux, the second the measured electric field, the third the applied magnetic field). Results of magneto-thermopower and Nernst coefficients will be reported for single-crystal samples oriented with  $x=[100]$ . The Nernst coefficients of elemental iron contain a contribution of a direct spin-transfer mechanism, which should be present in the absence of an interface between a ferromagnet and a normal metal. This mechanism could be put to use in high temperature ferromagnetic metallic thermoelectric alloys. 1. M. E. Lucassen et al., Appl. Phys. Lett. 99 262506 (2011) 2. F. J. Blatt et al., Phys. Rev. Lett. 18.11 (1967).

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Sarah Watzman  
Department of Mechanical and Aerospace Engineering,  
The Ohio State University, Columbus, Ohio, USA

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