

Abstract Submitted  
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**Magnon-drag contribution to the Nernst effect of single-crystal iron** SARAH WATZMAN, The Ohio State University, HYUNGYU JIN, Stanford University, JOSEPH HEREMANS, The Ohio State University — The thermopower of single-crystal iron has recently been proven to be dominated by magnon-drag [1]. Experimental results align with hydrodynamic and microscopic theories [2] that underline the similarity between the magnon-drag charge Seebeck effect and the spin-Seebeck effect. Here, the results are expanded to the Nernst effect. The Nernst coefficient of iron is shown to be quite large and is expected to contain a contribution similar to the spin-Seebeck effect. In this case, it is present in the absence of a ferromagnet-normal metal interface or spin-orbit interactions. This talk will present a new model based on ambipolar transport. Spin-up and spin-down electrons are considered as charge carriers with separate magnon-drag Seebeck coefficients. The difference between these partial Seebeck coefficients leads to a large magnon-drag Nernst coefficient in the absence of a skew force. Furthermore, methods to increase the thermopower of iron while maintaining its magnon-drag effects will be presented with preliminary results. 1. S. J. Watzman et al., San Antonio APS March Meeting talk (2015) 2. M. E. Lucassen et al., Appl. Phys. Lett. **99** 262506 (2011)

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