Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Quantitative inverse spin Hall effect detection under control of the ferromagnetic resonant driving field amplitude[1] MARZIEH KAVAND, CHUANG ZHANG, DALI SUN, HANS MALLISA, VALY VARDENY, CHRISTOPH BOEHME, University of Utah — Charge-free spin current from a ferromagnetic (FM) into a non-magnetic material is possible under FM resonance (FMR), and this can be observed through spin- to charge-current conversion using the inverse spin Hall effect (ISHE) [1,2]. As the magnitude of the ISHE scales linearly with the power associated with the FMR driving field amplitude B_1, quantitative ISHE measurements require precise control of B_1. This study demonstrates in *situ* monitoring of B_1 by electron paramagnetic resonantly induced transient nutation of paramagnetic molecules (1:1complex of α, γ-bisdiphenylene- β-phenylallyl and benzene, BDPA) placed in proximity of an NiFe/Pt-based ISHE device. Concurrent to an ISHE experiment, B_1 is obtained from the inductively measured BDPA Rabi-nutation frequency. High reproducibility of the ISHE measurement is achieved using this approach combined with the renormalization of the ISHE voltage to B_1^2, with an accuracy limited only by the inhomogeneity of the FMR driving field [3]. [1] K. Ando, at al., *J. Appl. Phys.* **109**, 103913 (2011). [2] D. Sun et al., *Nat. Mater.* **15** 863-869 (2016). [3] M. Kavand et al., arXiv:1610.2759v1.

[1]This work was supported by the NSF, DMR-1404634. Acknowledgement is also made to DMR-1121252 for support of the device preparation facilities.

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Date submitted: 07 Nov 2016 Electronic form version 1.4