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Harmonic Generation in InAs Nanowire Double Quantum Dots M.D. SCHROER, M. JUNG, K.D. PETERSSON, J.R. PETTA, Princeton University — InAs nanowires provide a useful platform for investigating the physics of confined electrons subjected to strong spin-orbit coupling. Using tunable, bottom-gated double quantum dots, we demonstrate electrical driving of single spin resonance.^{1,2} We observe a standard spin response when the applied microwave frequency equals the Larmor frequency f_0 . However, we also observe an anomalous signal at frequencies $f_n = f_0/n$ for integer n up to $n \sim 5$. This is equivalent to generation of harmonics of the spin resonance field. While a $f_0/2$ signal has been observed,³ we believe this is the first observation of higher harmonics in spin resonance. Possible mechanisms will be discussed.⁴ Acknowledgements: Research supported by the Sloan and Packard Foundations, the NSF, and Army Research Office.

¹S. Nadj-Perge *et al.*, Nature **468**, 1084 (2010)

²M.D. Schroer *et al.*, Phys. Rev. Lett. **107**, 176811 (2011)

³E.A. Laird *et al.*, Phys. Rev. Lett. **99**, 246601 (2007)

⁴E.I. Rashba, arXiv:1110.6569 (2011)

Prefer Oral Session
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