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.\textsuperscript{1,2} We observe a standard spin response when the applied microwave frequency equals the Larmour 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 observed,\textsuperscript{3} we believe this is the first observation of higher harmonics in spin resonance. Possible mechanisms will be discussed.\textsuperscript{4} Acknowledgements: Research supported by the Sloan and Packard Foundations, the NSF, and Army Research Office.

\textsuperscript{1}S. Nadj-Perge \textit{et al.}, Nature \textbf{468}, 1084 (2010)
\textsuperscript{4}E.I. Rashba, arXiv:1110.6569 (2011)