

Abstract Submitted  
for the MAR16 Meeting of  
The American Physical Society

**Resonant and Time-Resolved Spin Noise Spectroscopy** XINLIN SONG, BRENNAN PURSLEY, VANESSA SIH, University of Michigan — Spin noise spectroscopy is a technique which can probe the system while it remains in equilibrium. It was first demonstrated in atomic gases and then in solid state systems. Most existing spin noise measurement setups digitize the spin fluctuation signal and then analyze the power spectrum. Recently, pulsed lasers have been used to expand the bandwidth of accessible dynamics and allow direct time-domain correlation measurements. Here we develop and test a model for ultrafast pulsed laser spin noise measurements as well as a scheme to measure spin lifetimes longer than the laser repetition period. For the resonant spin noise technique, analog electronics are used to capture correlations from the extended pulse train, and the signal at a fixed time delay is measured as a function of applied magnetic field. [1]

[1] B. C. Pursley, X. Song, and V. Sih, arXiv: 1508.07383

Xinlin Song  
University of Michigan

Date submitted: 27 Oct 2015

Electronic form version 1.4