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Nonequilibrium Spin Noise Spectroscopy NIKOLAI SINITSYN, Los Alamos Natl Lab, YURI PERSHIN, U. South Carolina, VALERY SLIPKO, V. N. Karazin Kharkov National University, FUXIANG LI, Texas A&M University — Spin Noise Spectroscopy (SNS) is an experimental approach to obtain correlators of mesoscopic spin fluctuations in time by purely optical means. We explore the information that this technique can provide when it is applied to a weakly non-equilibrium regime when an electric current is driven through a sample by an electric field. We find that the noise power spectrum of conducting electrons experiences a shift, which is proportional to the strength of the spin-orbit coupling for electrons moving along the electric field direction. We propose applications of this effect to measurements of spin orbit coupling anisotropy and separation of spin noise of conducting and localized electrons.

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