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Time dependent universal conductance fluctuations in AuPd, Ag, and Au wires A. TRIONFI, S. LEE, D. NATELSON, Rice University Dept. of Physics and Astronomy — Quantum transport phenomena allow experimental determinations of the phase coherence information in metals. We report quantitative comparisons of inferred coherence lengths from weak localization magnetoresistance measurements and time-dependent universal conductance fluctuation data. A detailed explanation of how these two measurements are performed and analyzed will be given. Strong agreement is observed in both quasi-2D and quasi-1D AuPd samples, a metal known to have high spin-orbit scattering. However, quantitative agreement is not seen in quasi-1D Ag wires below 10 K, a material with intermediate spin-orbit scattering. Possible explanations for this disagreement are discussed. An enhancement of the conductance fluctuations in Au has also been observed by depositing a thin layer of Al_2O_x, an oxide known to have a large number of mobile two level systems, over the sample. Preliminary results will be reported.

Aaron Trionfi
Rice University

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