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Kondo Effect in Bare Electromigrated Break Junctions ANDREW HOUCK, Harvard University, JAREK LABAZIEWICZ, EMILY CHAN, JOSHUA FOLK, ISAAC CHUANG, MIT — Electromigrated break junctions are one of only a very few systems currently available that provide sub-nanometer electrode gaps in a gated geometry. They have been used in several experiments over the past few years to measure transport through nanometer-scale objects such as single molecules. Our measurements show that the electromigrated electrode system—even by itself, without added nanoparticles— is richer than previously thought. This talk will present gate- dependent transport measurements of Kondo impurities in bare gold break junctions, generated with high yield using an electromigration process that is actively controlled. An unexpected behavior of the splitting is observed in the crossover regime, where spin splitting is of the same order as the Kondo temperature. The Kondo resonances observed here may be due to atomic-scale metallic grains formed during electromigration.

> Andrew Houck Harvard University

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