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Non-equilibrium transport through a single molecular Kondo impurity in a scanning tunneling microscope junction UNGDON HAM, Department of Physics and Astronomy, University of California, Irvine, WILSON HO, Department of Physics and Astronomy and Department of Chemistry, University of California, Irvine — An unpaired spin from a single electron trapped in a molecular orbital in a double barrier scanning tunneling microscope (STM) junction at sub-Kelvin temperature and high magnetic field showed a non-equilibrium transport through a Kondo impurity. Hysteresis and switching in a conductance allows the spin and charge state of the molecule in the junction to be controlled. Mechanically tuning the coupling of the single spin to STM tip showed a gradual change from lowest order spin-flip inelastic tunneling spectroscopy (IETS) to the Kondo resonance. Using the imaging capability of STM, we observed clear sub-molecular node structures of the spin-flip IETS and the Kondo resonance.

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