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Spin transport through individual single-walled carbon nanotubes SUYONG JUNG, ZHEN YAO, Department of Physics, The University of Texas at Austin, Austin, TX 78712 — We have investigated spin transport through individual single-walled carbon nanotubes contacted with ferromagnetic permalloy electrodes. At low temperatures, hysteretic magnetoresistance (MR) is observed in both the Fabry-Perot interference regime and the Kondo regime. Both the sign and magnitude of the MR oscillate as a function of gate and bias voltages. The behavior in the interference regime can be explained well using non-interacting ballistic model incorporating the effect of spin-dependent interfacial phase shift. In the strongly interacting Kondo regime, however, the behavior of the MR is qualitatively different. We will present possible theoretical models and numerical fittings to elucidate the MR features in our data.

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