Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

The Kondo effect of a magnetic impurity in an ultrasmall metallic grain HUBERT HEERSCHE, ZEGER DE GROOT, LEO KOUWENHOVEN, HERRE VAN DER ZANT, Kavli Institute of Nanoscience, Delft Unversity of Technology, Delft, The Netherlands — We have studied the Kondo effect of a magnetic impurity embedded in a small metallic grain with a level spacing comparable to the Kondo temperature (Kondo box). Small ($\sim$ 1nm) gold grains weakly coupled to source and drain electrodes were fabricated on top of an aluminum gate electrode using electromigration. Without magnetic impurities present, Coulomb blockade with charging energies exceeding 100 meV was observed. If cobalt impurities are introduced in the gold a gate dependent Kondo effect (T_k $\sim$100 K) is often observed. In many cases the Kondo peak is splitted which we attribute to the discreteness of the conduction electron spectrum of the gold grain. Temperature and magnetic field dependence contribute to a better understanding of the Kondo box. *email: Hubert@qt.tn.tudelft.nl*

Herre van der Zant
Kavli Institute of Nanoscience, Delft Unversity of Technology, Delft, The Netherlands

Date submitted: 01 Dec 2004 Electronic form version 1.4