



## **Takis Kontos**

(Ecole Normale Supérieure, Paris)

### **Towards new tools for manipulating the electronic spin in coherent nanoconductors**

In the first part of my talk, I will present our recent experiments on non-local spin dependent transport in carbon nanotubes connected to multiple ferromagnetic and normal contacts. I will show that our findings point to a new way to couple the orbital and the spin degree of freedom of the electronic wave function and therefore to manipulate the electronic spin by pure electrical means. In the second part of my talk, I will discuss our recent proposal for using such an “artificial spin-orbit coupling” for circuit quantum electrodynamics. In particular, we predict that one can achieve the strong coupling regime between a single electronic spin and cavity photons in a setup where a double quantum dot connected to ferromagnetic contacts is coupled electrically to cavity photons.

**17. December 2010, 15:30 Uhr**

**Universität Tübingen, Raum D4 A19  
Auf der Morgenstelle 14, 72076 Tübingen**

