



**CO.CO.MAT**

CONTROL OF QUANTUM CORRELATIONS IN TAILORED MATTER  
SFB/TR 21 – STUTTGART, ULM, TÜBINGEN

## Kolloquium

**Dr. Matthew Jones**  
(Durham University)

### Quantum Optics and Quantum Information with Optically Trapped Single Atoms

I will describe recent work performed in the Quantum Optics Group in Orsay, France on trapping and manipulating single rubidium atoms in a sub-micron sized trap, formed at the waist of a tightly focused laser beam. Arrays of these traps can be used to make an array of single atom qubits for use in quantum information experiments. Recently, we showed that we can use the single trapped atom as a high quality source of triggered single photons. This has allowed us to demonstrate two-photon interference between single photons spontaneously emitted by different atoms. I will also present our latest experiments on using two-photon Raman transitions to perform single-qubit operations in this system, and discuss the perspectives for using these techniques for entangling distant atoms without direct atom-atom interactions.

**Wann?** Freitag 12.01.2007, 14:00 Uhr

**Wo?** Universität Tübingen,  
Auf der Morgenstelle 14, Raum D4 A19