

**PHYSIKALISCHES KOLLOQUIUM**  
**EINLADUNG**

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Monday, 04.05.2015, 16.15 p.m., W2-1-148

speaks

**Prof. Dr. Mauro Antezza**

**Laboratoire Charles Coulomb Université Montpellier,**

**France**

about

**„ Non equilibrium quantum manipulation: from robust entanglement to  
quantum thermal machines“**

We will discuss the behavior of one or more elementary quantum system (atom, molecules, quantum dot, ...) interacting with a stationary, simple and rich electromagnetic environment out of thermal equilibrium: The electromagnetic field is produced by a simple configuration of macroscopic objects held at thermal equilibrium at different temperatures. We will show how the internal atomic dynamics can be deeply affected by the non equilibrium configuration leading to unexpected phenomena like a spontaneous inversion of population, new cooling mechanisms obtained by heating the system, and the possibility to create and protect entanglement in a stationary and robust way. Finally, we will discuss how this system may directly allow the realization of atomic quantum thermal machines, with high efficiency and a genuine quantum behavior.

All interested persons are cordially invited.

Gez. Prof. Dr. Martin Holthaus