

# “Towards coherent Rydberg excitation of neutral atoms in periodical optical dipole trap arrays”

## **Abstract:**

The work presented in this talk is part of the QUIPS experiment (**Q**uantum **I**nformation **P**rocessing **S**ystems) in the research group of Prof. Dr. G. Birkl at TU Darmstadt. In that experiment neutral  $^{85}\text{Rb}$  atoms are cooled in a magneto-optical trap (MOT) and then loaded into a two-dimensional register of optical dipole traps in order to implement a universal set of quantum gates needed for quantum computation.

The talk gives a short summary of the current status of the experimental set-up. It describes the difficulties of the two-photon excitation scheme and explains the adjustments done in the last months in order to demonstrate coherent Rydberg excitation in periodical optical dipole registers.