

**TIME-DEPENDENT PHENOMENA IN ULTRACOLD ATOMS CONFINED
BY OPTICAL LATTICES**

Corinna Kollath

*LMU München,
Sektion Physik Theresienstr.37,
D-80333 München, Germany*

The good tunability of the system parameters in the experimental realization of ultracold atoms in optical lattices opens the possibility to investigate time dependent phenomena. We study the response of the ultracold atoms in the optical lattice to external time-dependent perturbations like the creation of a density perturbation or a periodic modulation of the lattice height. We calculate the time-evolution of the perturbed system using the adaptive time-dependent DMRG (density-matrix renormalization group) method.