## Seminar/Talk

# Quantum many-body dynamics of strongly interacting atom arrays

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Host: Georgios Katsaros

The realization of large-scale controlled quantum systems is an exciting frontier in modern physical science. In this talk, I will introduce a new platform based on cold atoms in arrays of optical tweezers. We use atom-by-atom assembly to deterministically prepare arrays of individually controlled cold atoms. A measurement and feedback procedure eliminates the entropy associated with the probabilistic trap loading and results in defect-free arrays of over 60 atoms. Strong controllable interactions between these atoms are introduced by exciting them to Rydberg states. The resulting Ising-type interactions lead to entanglement and non-trivial spatial correlations across the array. In particular, we explore adiabatic transitions into crystalline states and study quantum dynamics of this strongly correlated system in the vicinity of a phase transition.

**Wednesday, May 10, 2017 11:30am - 12:30pm**
Mondi Seminar Room 2, Central Building

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