Abstract Submitted
for the DAMOP20 Meeting of
The American Physical Society

Rydberg Dressing in Optical Tweezer Arrays NIKOLAUS LORENZ, LORENZO FESTA, LEA STEINERT, PHILIP OSTERHOLZ, ROBIN EBERHARD, Max-Planck Instititute of Quantum Optics, CHRISTIAN GROSS[1], Eberhard Karls Universitt Tbingen — Neutral atoms in microtrap arrays brought to interaction by Rydberg coupling offer a novel platform to study quantum magnetism. We have constructed a new experiment with potassium atoms, which aims to induce the magnetic interactions via near-resonant Rydberg coupling, so called Rydberg dressing. Here we report on coherent Rydberg coupling in a two dimensional array of single atoms. We observe fast coherent Rabi oscillations of single atoms as well as of small Rydberg superatoms. Finally we discuss first experiments towards Rydberg dressing induced interactions among atomic ground states.

[1]also Max-Planck Instititute of Quantum Optics

Nikolaus Lorenz
Max-Planck Instititute of Quantum Optics

Date submitted: 29 Jan 2020 Electronic form version 1.4