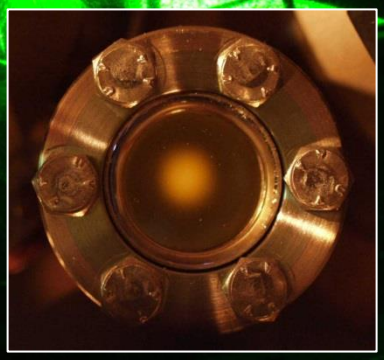
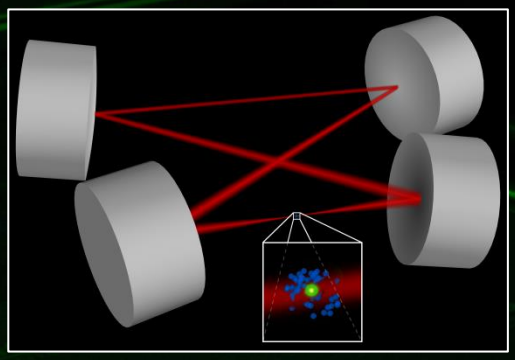
Max Planck Institute of Quantum Optics
Quantum Dynamics Division

PhD Position
Doktorandenstelle
(Experimental Physics / Quantum Optics)


Optical Quantum Information Processing with Ultracold Rydberg Atoms

Rydberg atoms are highly excited atomic states. Due to their strong, long range interactions a single Rydberg atom can influence the optical properties of a large ensemble of ultracold atoms. A variety of fascinating nonlinear physics at the level of a single excitation emerges. Recently, we demonstrated the first two-photon quantum gate based on Rydberg interactions.

In your thesis work, you will join our team for the next steps toward applications in quantum networks and quantum computing. This will involve many aspects of quantum optics. A moderate finesse optical resonator is added to the system to boost the efficiency of the quantum gate to a record level. The implementation of improved laser cooling and trapping schemes promises long coherence times and fast preparation of ultracold atomic samples.

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