

Abstract Submitted  
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**Towards Rydberg quantum optics in a hollow core fiber**<sup>1</sup> MOHAMMAD NOAMAN, MARIA LANGBECKER, PhD Student, JGU Mainz, PATRICK WINDPASSINGER, University Professor, JGU Mainz — Cold atoms inside hollow-core fibers present a promising candidate to study strongly coupled light-matter systems. Adding coherent quantum state control and the intriguing features of Rydberg atoms, i.e. long range dipolar interactions leading to a dipole blockade, to the system should allow for the generation of exotic polaritonic and photonic states. This talk will review the current status of our experimental setup where laser cooled Rubidium atoms are transported into a hollow-core fiber. We present the first measurements of Rydberg EIT in the dipole trap in front of the fiber and discuss the progress towards Rydberg physics in a quasi-one-dimensional geometry.

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