Abstract Submitted
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Coherent Excitation of Rydberg Atoms in Micron Sized Vapor Cells[1] JAMES SHAFFER, The University of Oklahoma, HAROLD KUBLER, THOMAS BALUKTSIAN, ROBERT LOW, TILMAN PFAU, The University of Stuttgart — The coherent control of mesoscopic ensembles of atoms and Rydberg atom blockade are the basis for proposed quantum devices such as integrable gates and single photon sources. So far, experimental progress has been limited to complex experimental setups that use ultracold atoms. Here, we show that coherence times of 100 ns are achievable with coherent Rydberg atom spectroscopy in micron sized thermal vapour cells. We investigated states with principle quantum numbers between 30 and 50. Our results demonstrate that microcells with a size on the order of the blockade radius, 2 microns, at temperatures of 100-300 C are robust, promising candidates to investigate low dimensional strongly interacting Rydberg gases, construct quantum gates and build single photon sources.

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