Abstract Submitted
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High-resolution studies of strongly magnetized, cold Rydberg atoms near the photo-ionization threshold[1] MUDESSAR SHAH, BRENTON KNUFFMAN, ERIC PARADIS, CORNELIUS HAMPEL, RAHUL MHASKAR, GEORG RAITHEL, University of Michigan — In previous work, we have studied Rydberg-atom dynamics in the strongly magnetized regime using ultra-cold gases of Rb^{85}-atoms prepared in a high-magnetic-field atom trap [1] Rydberg atoms were excited using a pulsed dye laser with a bandwidth of $\sim$ 10 GHz. Interesting features that qualitatively emerged in this previous work included the auto-ionization of individual, metastable quantum states above the photo-ionization threshold and coherent spin oscillations between several magnetic manifolds of the system. Quantitative investigations of these phenomena require a narrow-band excitation scheme. Here, we report on first high-resolution spectroscopic studies of individual quantum states of trapped, strongly magnetized atoms above the photo-ionization threshold using a narrow-band excitation laser ($<$ 5MHz linewidth). "Time dependence and Landau quantization in the ionization of cold, magnetized Ryberg atoms," J.-H. Choi, J. R. Guest, E. Hansis, A. P. Povilus, and G. Raithel, Phys. Rev. Lett. **95**, 253005 (2005).

[1]DOE

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