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Measurement of spin susceptibility in ultracold lithium-6 gases by a radiofrequency method[1] FENG XIONG, YUN LONG, COLIN PARKER, Georgia Inst of Tech, PARKER LAB TEAM — Cold atoms have been widely applied in simulating material systems, and in particular "pseudogap" effects in the BEC-BCS crossover model make for interesting comparisons to the high-Tc cuprates. We present a radiofrequency (RF) method to create imbalances between equilibrium RF-dressed states and measure the equilibrium spin susceptibility of lithium-6 atoms in a trap with a magnetic gradient. We will present a conceptual overview of this method, which relies on the small but non-zero difference in the magnetic moment between hyperfine states. For this purpose, the second lowest two hyperfine states of lithium-6 are chosen so that we can take advantage of their large magnetic differential moment. Here we emphasize the experimental setup, including the imaging system, and show benchmarking measurements for the spin susceptibility of weakly interacting gases, the dressed-spin relaxation time, and discuss possible parasitic effects.

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