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Towards strongly interacting fermionic potassium A.B. BARDON, N.S. CHENG, B. BRAVERMAN, L.J. LEBLANC, J.H. THYWISSEN, Department of Physics, University of Toronto — A degenerate gas of fermionic atoms at its Feshbach resonance provides a clean and versatile system to study topics such as ferromagnetism, resonant superfluids, and few-body bound states. In this talk we describe progress towards strongly interacting gases of ^{40}K in our laboratory. Our approach differs from the standard one in that we use a microfabricated magnetic trap to initiate evaporative cooling. Once optically trapped, atoms can also be manipulated using the chip as a source of strong magnetic gradients, RF fields, and microwaves. We will discuss several improvements to our apparatus, including increased laser cooling power, a dark SPOT, a pulsing sequence for the potassium dispenser, and microwave manipulation of rubidium. We will also report on our progress towards strongly interacting gases, using a Feshbach field now stabilized to 2 parts in 10^4.

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