

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Spin-imbalanced atomic Fermi gases in one dimension and the prospects for FFLO superconductivity¹ C.J. BOLECH, P. KAKASHVILI, Rice University — Growing expertise to engineer, manipulate and probe different analogs of condensed matter systems allows to probe properties of exotic pairing states such as the Fulde-Ferrell-Larkin-Ovchinnikov state. Inspired by ongoing experiments at Rice university, we are studying the pairing in spin-imbalanced ultracold atomic system of fermions in one dimension. Calculations are done using the Bethe Ansatz technique and the trap is incorporated into the solution via local density (Thomas-Fermi) approximation. The thermodynamic-Bethe-Ansatz equations are solved numerically and different density profiles (total-, spin- and entropy-densities) are calculated in the trap for different finite temperatures. A scheme to identify the phase diagram using total density profiles in the trap is proposed that would be immediately useful for experimentalists.

¹We acknowledge support from ARO under DARPA.

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Date submitted: 20 Nov 2008

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