SPIN-POLARIZED ULTRACOLD FERMIONS IN TRAPS*

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The physics of strongly-interacting asymmetric Fermi systems plays a central role in nuclear and condensed matter problems. Experiments performed at MIT and Rice University disagree about the existence of an intermediate phase between the superfluid and normal regions in an imbalanced Fermi system. Theoretical considerations using variational calculations show that this intermediate phase must exist in a homogeneous system. In this study, we investigate the existence of this intermediate phase in laboratory traps. The N+1 body problem in oscillator traps is considered, which determines whether an intermediate phase necessarily exists in a given trap.

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