



## Paired-Fermion superfluids with ultracold atoms

The partially-polarized two-species Fermi gas with an attractive inter-species contact interaction is being studied experimentally using cold atoms. This system has a rich zero-temperature phase diagram, with various superfluid phases, as well as a regime of phase separation. One phase of long-standing interest is the Fulde-Ferrell-Larkin-Ovchinnikov superfluid, where the Cooper pairs condense at nonzero center-of-mass momenta. This phase is due to a Fermi surface nesting and can thus be enhanced by making the system quasi-one-dimensional, which is feasible by putting the gas in an optical lattice. I will discuss recent experimental and theoretical work on these systems.

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Host: Prof. Antonio Castro Neto; Some graphics from arXiv:cond-mat/0608455