

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Fermion superfluids of non-zero orbital angular momentum near resonance ROBERTO DIENER, TIN-LUN HO, Department of Physics, The Ohio State University — The BEC-BCS crossover of fermion superfluids with near-resonance s -wave interactions has been extensively studied in the past year. We extend these studies to the pairing of Fermi gases near the scattering resonance of the $\ell \neq 0$ partial wave at $T = 0$. Using a model potential which reproduces the actual two-body low energy scattering amplitude, we have obtained an analytic solution of the gap equation. We show that the ground state of $\ell = 1$ and $\ell = 3$ superfluids are orbital ferromagnets with pairing wavefunctions Y_{11} and Y_{32} respectively. For $\ell = 2$, there is a degeneracy between Y_{22} and a “cyclic state”.

Roberto Diener
Department of Physics, The Ohio State University

Date submitted: 01 Dec 2004

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