

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Population imbalance and pairing in the BCS-BEC crossover of three-component ultracold fermions TOMOKI OZAWA, GORDON BAYM, University of Illinois at Urbana-Champaign — We investigate the phase diagram and the BCS-BEC crossover of a homogeneous three-component ultracold Fermi gas with a $U(3)$ invariant attractive interaction. We show that the system at sufficiently low temperatures exhibits population imbalance, as well as fermionic pairing. We describe the crossover in this system, connecting the weakly interacting BCS regime of the partially population-imbalanced fermion pairing state and the BEC limit with three weakly interacting species of molecules, including pairing fluctuations within a t-matrix calculation of the particle self-energies.

Tomoki Ozawa
University of Illinois at Urbana-Champaign

Date submitted: 19 Nov 2010

Electronic form version 1.4