

MAR06-2005-000495

Abstract for an Invited Paper
for the MAR06 Meeting of
the American Physical Society

Phase Diagram of Cold Polarized Fermi Gas

DAM THANH SON, University of Washington

We propose the phase diagram of cold polarized atomic Fermi gas with zero-range interaction. We identify four main phases in the plane of density and polarization: the superfluid phase, the normal phase, the gapless superfluid phase, and the modulated phase. We argue that there exist a Lifshitz point at the junction of the normal, the gapless superfluid and the modulated phases, and a splitting point where the superfluid, the gapless superfluid and the modulated phases meet. We show that the physics near the splitting point is universal and derive an effective field theory describing it. We also show that subregions with one and two Fermi surfaces exist within the normal and the gapless superfluid phases.