

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Density profile and collective modes of the unpolarized and partially polarized trapped Fermi gas in the BCS-BEC crossover region.

THEJA DE SILVA, ERICH MUELLER, LASSP, Cornell University — We study the zero temperature BCS-BEC crossover physics of both the unpolarized and partially polarized 2-component trapped Fermi gas near a Feshbach resonance. We investigate the spatial distribution of the partially polarized atomic system; studying superfluid and normal fluid phase separation and coexistence within a local density approximation. We calculate collective mode frequencies as a function of the interaction strength, finding quantitative agreements with experiments.

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Date submitted: 29 Nov 2005

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