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.