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Ground State Properties of Cold Bosonic Atoms At Large Scattering Lengths[1] JUNLIANG SONG, FEI ZHOU, University of British Columbia — In this work, we study bosonic atoms at large scattering lengths using a variational method where the condensation amplitude is a variational parameter. We further examine momentum distribution functions, chemical potentials and speed of sound, and spatial density profiles of cold bosonic atoms in a trap in this limit. The later two properties turn out to bear similarities of those of Fermi gases. Estimates obtained here are applicable near Feshbach resonances, particularly when the fraction of atoms forming three-body structures is small and can be tested in future cold atom experiments.

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