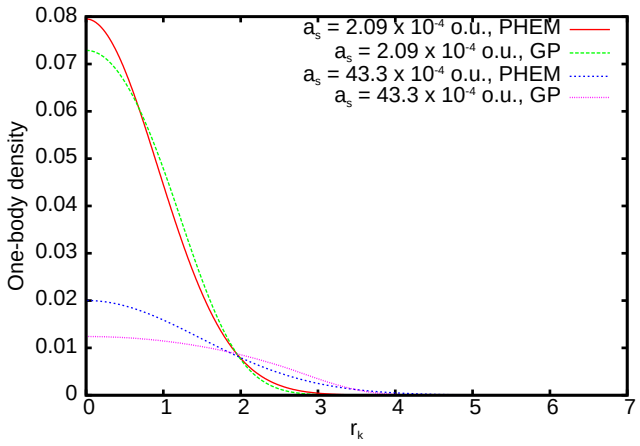

FIG. 1. (Color online) One-body density distribution as a function of r_k (in o.u.) for a repulsive BEC with A=10000 bosons. The choice of $a_s = 0.00433$ o.u. corresponds to ^{87}Rb experiment in the JILA trap. PHEM corresponds to our present many-body results and GP corresponds to mean-field results.

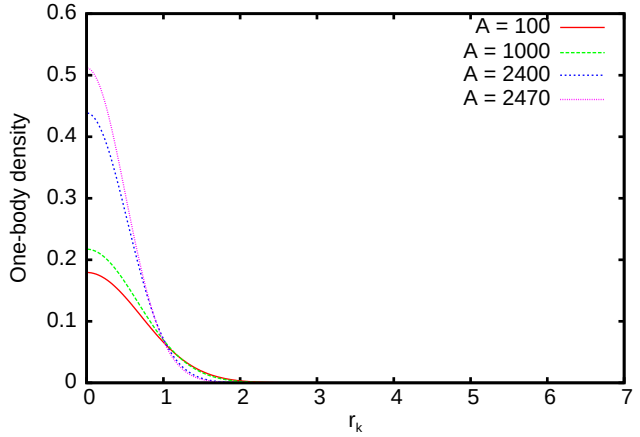

FIG. 2. (Color online) One-body density distribution as a function of r_k (in o.u.) for an attractive interaction ($a_s = -1.836 \times 10^{-4}$ o.u. for ^{85}Rb atoms in the JILA trap), for various indicated values of particle numbers.

having a sharper peak, as the net interaction increases. The peak at $k = 0$ becomes more pronounced with increase in effective repulsion, whereas for weak interaction it develops a long-range tail in the momentum space. The momentum is being redistributed to higher k values. The width of the low-momentum peak for $a_s = 0.00433$ o.u. and $A = 10000$ is about 0.7 μm^{-1}.

We have remarked earlier that with recent progress in creating atomic clouds with large dipole moment, interest has been shifted to longer range interaction instead of taking only