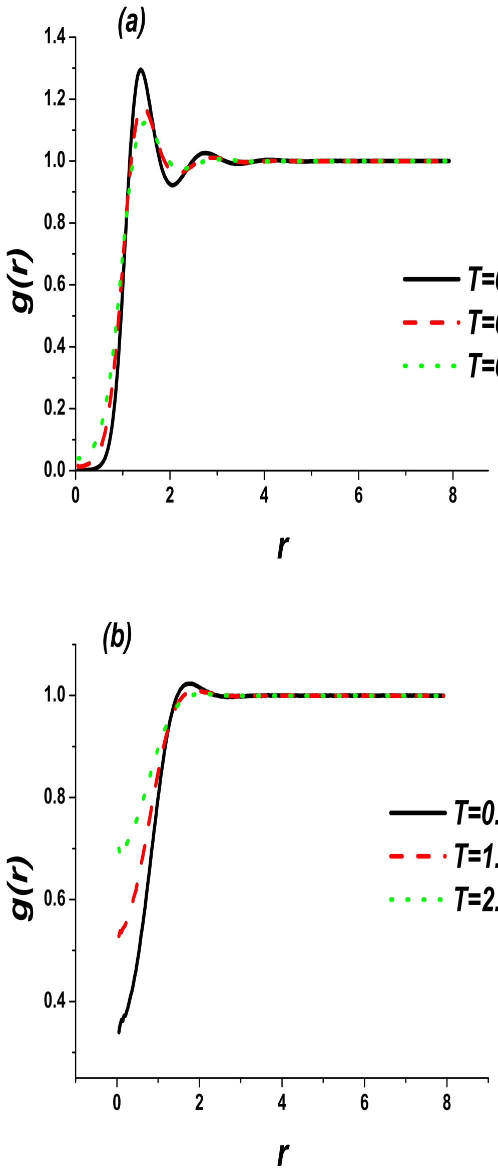

FIG. 7: Radial distribution functions of GCM for a set of isotherms at the density $\rho = 0.5$ (a) - $T = 0.04; 0.07$ and 0.1; (b) - $T = 0.5; 1.0$ and 2.0.

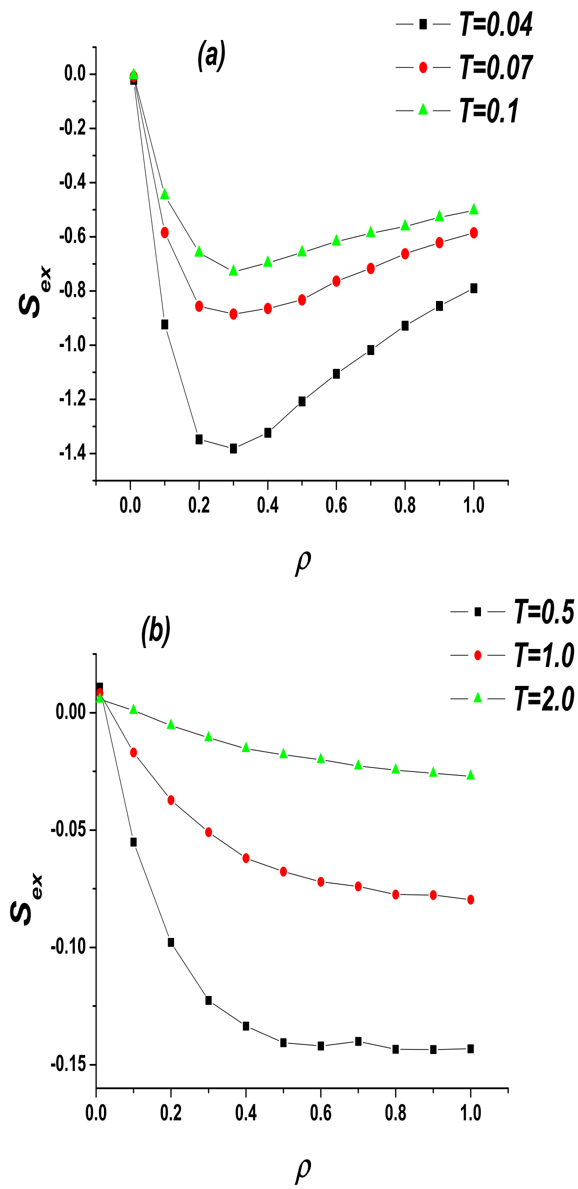

FIG. 8: Excess entropy of GCM for a set of isotherms. (a) - $T = 0.04; 0.07$ and 0.1; (b) - $T = 0.5; 1.0$ and 2.0.

of the entropies along two isotherms. One can see that both at high and low temperature the difference between excess entropy and pair contribution to it is rather large. This discrepancy is small at low densities, but greatly increases at the density about 0.4. Note that this density corresponds to a character distance $l \sim 1/\rho^{1/3} \simeq 1.35$, that is $l \simeq \sigma_1$. It allows to conclude that the interplay of the distances starts at this density and it is this interplay which makes the excess entropy and pair excess entropy difference to increase rapidly.

Fig. 13 shows the diffusion coefficient scaling with the pair part of the excess entropy. As is seen from the figures even at high temperatures the curve is not straight while at low temperatures the curve becomes very strange. Definitely the exponential relation between the diffusion coefficient and pair excess entropy is not valid.

The diffusion scaling with the full excess entropy is shown in the figure 14 (a) and (b). One can see from these pictures that the scaling rule works good for the temperatures $T = 0.5$ and $T = 0.4$ but already for $T = 0.35$ the deviation from the linear behavior occurs. This deviation develops more as the temperature decreases. At $T = 0.25$ a self crossing loop occurs. This loop even enlarges at lower temperatures. It is worth to note that the curve at low temperature $T = 0.2$ consists of two linear