# Isothermal Equations of State of Liquids and Intermolecular Potential Anisotropy

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The isothermal $K_T$ and adiabatic elasticity moduli $K_S$, thermal-expansion coefficient $\alpha_P$, isochoric $C_V$ and isobaric heat capacities $C_P$ and their ratio $\gamma$ of soft dumb-bell fluids were determined in Monte-Carlo simulations in a wide range of reduced densities and pressures. Atoms were assumed to interact through the soft sphere potential with exponent $m$=12. The distance between atoms $L$ was varied from 0 to 0.6. Atom diameters were chosen so that molecular (dumb-bell) volume didn't change and was equal to 1. It was shown that at constant pressure the dependence of above mentioned thermophysical properties from $L$ was much weaker than that of at constant density. Molecular nonsphericity was observed to not affect the pressure dependence of the elastic moduli. This may clarify the efficiency of fitting *P-V-T* data of a wide range of molecular liquids with isothermal equations of states such as Tait.