The Calculation of Transport Coefficients of Ultra Cold Normal Dipolar Bose Gas

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We derive the Boltzmann equation for relaxation rate, viscosity and thermal conductivity in ultra cold normal dipolar bose gas. We use anisotropic dipole- dipole interaction. We obtain the relaxation rate $r\overrightarrow{p}^{-1}$ to be proportional T^2, whereas the shear viscosity and thermal conductivity are proportional to $T^{\frac{1}{2}}$. Nikuni et al[J. Low Temp. Phys. 111, 516(1998)]by using the contact potential between the bose gas particles obtain the same temperature dependence. The different form of potentials in calculations show themselves in the coefficients of the viscosity and thermal conductivity. The ratio of viscosity coefficient for dipole-dipole interaction to contact potential is three order, and this ratio for thermal conductivity is two order. This means that higher viscosity is on the higher polarization.