Shear Viscosity of the Superconductor of Sr_2RuO_4 in the Normal State

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Sr_2RuO_4 is an unconventional superconductor of two dimensional layered perovskite structure with spin-triplet state and being probably $p-$wave. So energy gap in Sr_2RuO_4 is suggested on the two-dimensional cylindrical Fermi surface in isotropic form $|\Delta(\overrightarrow{k})| = (k_x^2 + k_y^2)^{\frac{1}{2}}$. The recent studies show that thermodynamic quantities in Sr_2RuO_4 such as specific heat represent different behaviors. The presence of nods in Energy gap leads to the presence of power laws instead of exponential behavior for $T \ll T_c$. Therefore, gap structure in Sr_2RuO_4 may not be isotropic and it may have linear nods. In our calculations for shear viscosity coefficients of Sr_2RuO_4in normal state, energy gap is considered two dimensional and isotropic. The normal state of Sr_2RuO_4 is well characterized as a quasi-two-dimensional Fermi liquid. Sr_2RuO_4 is very similar to A phase of superfluid ^3He.
In this paper, shear viscosity coefficients in normal state of Sr_2RuO_4 has been calculated based on Boltzmann equation and Abrikosov-Khalatnikov method and its temperature dependence gained in T^{-2} , it is acceptably consistent with the prediction of Fermi liquid theory about the superfluidity of three dimensional ^3He and their difference is only related to their coefficients. It is worth mentioning that calculation of shear viscosity coefficients in the superconductor phase of Sr_2RuO_4 is under study and the first calculations show exponential linear behavior for shear viscosity which is consistent with the experimental results.