Annotation

In this article we investigate a special kind of wave that can be propagated in quantum Fermi fluids. such as liquid He3, at temperatures very close to absolute zero. It is associated with the departure of the distribution function of the elementary excitations, or quasi-particles, existing in a Fermi fluid from the equilibrium value. The speed of zero sound C_{0} is not the same as the speed of ordinary sound C, which is dependent on the compressibility of the fluid. The existence of zero sound was predicted by L. D. Landau in 1957. Zero sound was observed experimentally in liquid He3 by the American physicists W. Abel, A. Anderson, and J. Wheatly in 1966. Under certain conditions, zero sound can also exist in metals where the electrons and ions form Fermi fluid. Latterly N. L. Tsintsadze generalized the Landau's dispersion relation of Zero sound including the quantum correction, using Novel quantum kinetic equation of Fermi particles. Also showed that electron Zero sound can exist in ideal Fermi in the absence of interaction between particles. In this case the dispersion relation is purely quantum. We investigate ion Zero sound waves using Novel quantum kinetic equation of Fermi particles, derive dispersion relation of Zero sound for electron-ion quantum plasma and investigate its limiting cases.