

Color superconductivity

Matter at sufficiently high densities and low temperatures is expected to be a color superconductor, which is a degenerate Fermi gas of quarks with a condensate of Cooper pairs near the Fermi surface. At the highest densities we have the color-flavor locked (CFL) phase, in which the strange quark participates symmetrically with the up and down quarks in Cooper pairing. In the lower densities one can expect to have other phases such as CFL-K0 and 2SC. We can find the signatures of color superconductivity in compact stars by computing thermodynamical and transport properties (such as mean free path, conductivity and viscosity) of different phases.

In this talk I will review the color superconductivity and calculations for finding the mean free path of the kaon in the CFL-K0 phase in neutron star.