

Applied Physics

August 23-24, 2018 | London, UK

Peculiarities of the BCS theory of superconductivity

Dragos-Victor Anghel

Institutul National de Fizica si Inginerie Nucleara, Romania

We study the effect of the relative value of the chemical potential with respect to the middle of the attraction band, on the results of the BCS theory of superconductivity. In this way, we observe that the phenomenology predicted by the theory is much richer than previously expected. If the attraction band (i.e. the interval in which the pairing interaction is manifested) is not symmetric with respect to the chemical potential, then the equation for the energy gap has two solutions, the superconductor-normal

metal phase transition temperature is changed, and the phase transition may become of the first order. The phase transition temperature decreases with the asymmetry, so, if the asymmetry can be modified by dopping of the superconductor or by applying pressure, then a structure similar to the so called “superconducting dome” is formed if we plot the transition temperature vs. dopping or pressure.

e: dragos@theory.nipne.ro