

Unusual superconductivity and its physical properties

L P GOR'KOV

Landau Institute of Theoretical Physics, USSR Academy of Sciences, 117334, Moscow, USSR

Abstract. Physical properties are discussed, which, in principle, would allow us to distinguish between nontrivial superconductivity and superconductivity of the ordinary type thus establishing its superconducting class. These properties are: the anisotropy of the upper and low critical fields, the magnetization curve, some peculiarities of the penetration depth, the impedance behaviour etc. It is pointed out that these superconductors could possess some magnetic properties. The role of defects is investigated and, in particular, the possibility of the magnetization in these superconductors which originates from the presence of ordinary defects.

The problem of nontrivial superconductivity is discussed in connection with available experimental data concerning new materials with the so-called "heavy fermions".

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