

Unconventional superconductors : anisotropy and multiband effects

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Abstrak

This book presents the anisotropy and multiband effects in newly discovered unconventional superconductors, cuprate superconductors, borocarbides, magnezium-diboride and oxypnictides. The physical properties of these unconventional superconductors and the application of the two-band Ginzburg-Landau theory to these superconducting compounds are explained. Temperature dependencies of fundamental superconducting parameters are calculated using the GL theory taking into account multiband- and anisotropy effects. A comparison of theoretical results and experimental data is conducted. Additionally, the analytical solution of the microscopical Eliashberg theory and of the BCS theory is developed for two-band and anisotropic superconductors. Fluctuation effects in newly discovered superconductors are also discussed.