THE SUPERCONDUCTING STATE OF THE HIGH-TRANSITION TEMPERATURE SUPERCONDUCTORS: EXPERIMENTAL BASIS

W. A. Little
Physics Department
Stanford University, Stanford CA 94305

Abstract

Experiments on the high-T_c cuprate superconductors continue to narrow the possible theoretical explanations of the phenomenon. Experimental evidence to date points to a BCS-like state, with pairs in singlet s-states, the familiar gap in the excitation spectrum, Type II behavior in a magnetic field and a normal state with fermi liquid origins. Several other features of the superconducting state in the cuprates, however, appear to differ from those of conventional alloy superconductors - these relate to the detailed structure of the gap and to the nature of the coupling mechanism. Recent experiments have helped clarify what these differences are, and together with the earlier experiments, they now impose still stronger constraints on theories of these superconductors. These and other developments will be reviewed.