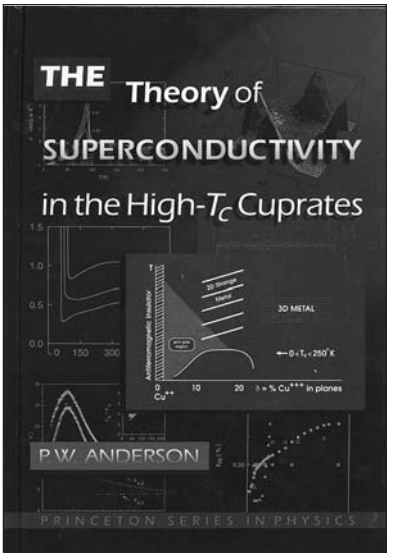
1997 *The Theory of Superconductivity in the High-T_c Cuprates*

P. W. Anderson



In 1977, Phil Anderson, while working at AT&T Bell Laboratories, won the Nobel Prize in Physics (with Sir Nevill F. Mott and John H. van Vleck) for fundamental theoretical investigations into the electronic structure of magnetic and disordered systems. The applications of this research are extraordinarily wide-ranging, from economics, to biology, to computer science.

Now the Joseph Henry Professor of Physics Emeritus at Princeton University, Anderson is internationally celebrated for his dedicated and insightful theoretical research on high-T_c superconductivity. This book was the long-awaited full presentation of his theory of high-T_c superconductivity in the cuprates. (Cuprates are ceramic materials that superconduct at temperatures much higher than should be possible according to conventional theory.) Superconductivity is a remarkable phenomenon that occurs in certain materials at low temperatures, characterized by the complete absence of electrical resistance and the damping of any interior magnetic flux. Anderson realized that explaining superconductivity required not a new mechanism or "gimmick" but a radical reworking of the electronic theory of metals.

This book contains full discussions of the experimental situation involving these complex materials, and also the latest research done by Anderson and collaborators to advance the development of a theory of high-temperature superconductivity. Since there is as yet no complete theory of high-temperature superconductivity, Anderson's encapsulation of what is currently known and unknown has made this book indispensable to theoretical discussions of superconductivity.