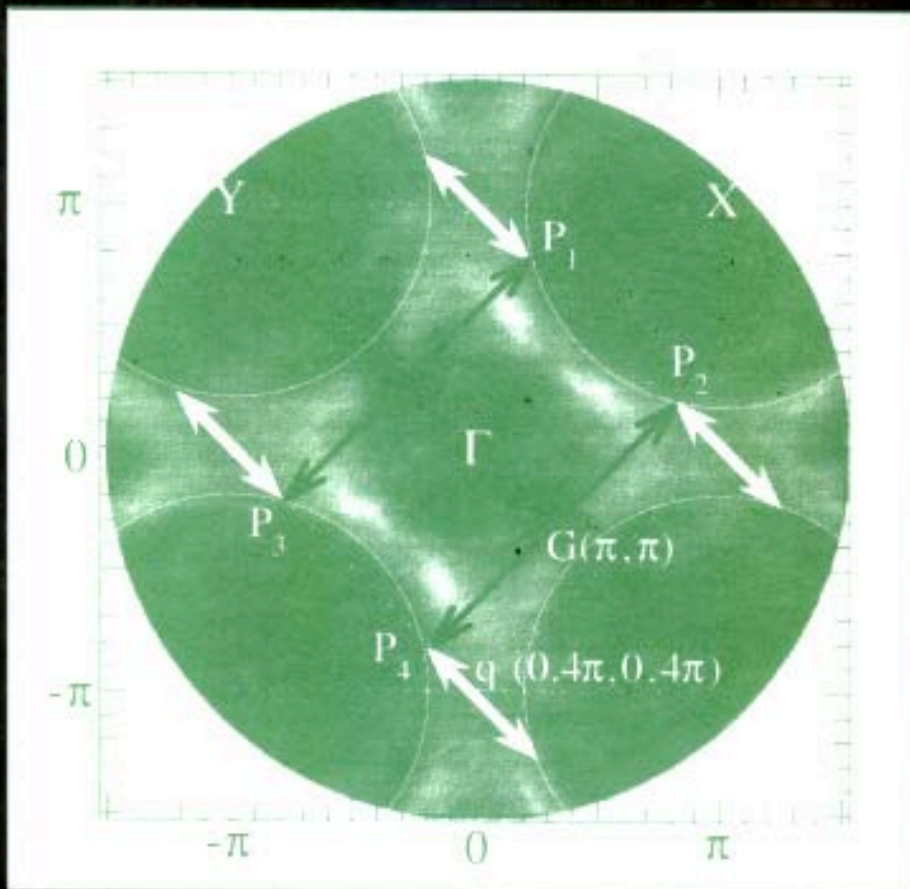


Selected Topics in Superconductivity

Stripes and Related Phenomena



Edited by

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and

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Preface

The problem of high- T_c superconductors has been a central issue in Solid State Physics since 1987. After the discovery of high- T_c superconductivity (HTSC) in doped perovskites, it was realized that the HTSC appears in an unknown complex electronic phase of condensed matter. In the early years, all theories of HTSC were focused on the physics of a homogeneous 2D metal with large electron–electron correlations or on a 2D polaron gas. Only after 1990, a novel paradigm started to grow where this 2D metallic phase is described as an inhomogeneous metal. This was the outcome of several experimental evidences of phase separation at low doping. Since 1992, a series of conferences on phase separation were organized to allow scientists to get together to discuss the phase separation and related issues.

Following the discovery by the Rome group in 1992 that “the charges move freely mainly in one direction like the water running in the grooves in the corrugated iron foil,” a new scenario to understand superconductivity in the high- T_c superconductors was open. Because the charges move like rivers, the physics of these materials shifts toward the physics of novel mesoscopic heterostructures and complex electronic solids. Therefore, understanding the striped phases in the perovskites not only provides an opportunity to understand the anomalous metallic state of cuprate superconductors, but also suggests a way to design new materials of technological importance. Indeed, the stripes are becoming a field of general scientific interest.

This book is a collection of papers in the field of stripes and related phenomena. The most relevant theoretical and experimental contributions, presented at the second international conference on *Stripes and High T_c Superconductivity* from experts in the field of stripes and related phenomena are selected for the publication. Apart from the relevant contribution on stripes in the cuprates, the book includes contributions on other stripe phases observed in manganites, nikelates, spin ladders, and heterostructures. Because a large stream of research is converging toward the stripe scenario with a growing community, this book serves as an important reference in the field of striped phases and high- T_c superconductivity.

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