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KEY=ITINERANT - BRONSON YATES

Magnetothermal Properties near Quantum Criticality in the Itinerant Metamagnet Sr3Ru2O7

[Springer Science & Business Media](#) Our department nominated this thesis for a Springer award because we regard it as an outstanding piece of work, carried out with a remarkable level of independence. Andreas Rost joined us in 2005, as one of the inaugural Prize Students of the Scottish Universities Physics Alliance. Our research group has been working on Sr Ru O , in collaboration with our colleagues in the group of Professor Y. Maeno 3 2 7 at Kyoto, since 1998. By early 2005 we had tantalising evidence that a novel phase was forming at very low temperatures, in an overall phase diagram dominated by quantum ?uctuations. We knew that comprehensive thermodynamic information would be needed in order to understand how this was happening, and that the demanding constraints of low temperature and high magnetic ?eld meant that bespoke apparatus would need to be constructed. Andreas had studied the speci?c heat of glasses below 50 mK during his diploma thesis work at Heidelberg, and was brimming with ideas about how to proceed. We gave him advice, and constantly discussed the physics with him, but quickly realised that the best way to proceed practically was to give him a budget, and let him take the main design decisions, double-checking with us from time to time.

Uniaxial Stress Technique and Investigations of Correlated Electron Systems

[Springer](#) This book reports on the development and application of a new uniaxial pressure apparatus that is currently generating considerable interest in the field of materials physics. The author provides practical guidelines for performing such experiments, backed up by finite element simulations. Subsequently, the book reports on two uses of the device. In the first, high pressures are used to tune to a Van Hove singularity in Sr2RuO4, while the effects on the unconventional superconductivity and the normal state properties are investigated. In the second experiment, precise and continuous strain control is used to probe symmetry breaking and novel phase formation in the vicinity of a quantum critical point in Sr3Ru2O7.

Proceedings of Physical Phenomena at High Magnetic Fields-IV

Santa Fe, New Mexico, USA, 19-25 October 2001

[World Scientific](#) Physical Phenomena at High Magnetic Fields IV (PPHMF-IV) was the fourth in the series of conferences sponsored by the National High Magnetic Field Laboratory (NHMFL). The success of PPHMF-I, II and III, held in 1991, 1995 and 1998 respectively, encouraged the organizers to once again bring together experts in scientific research areas where high magnetic fields play an important role, to critically assess the current status of research in these areas, and to discuss promising new directions in science, as well as applications which are in the forefront of these fields.

Quantenkritisches Verhalten in hochkorrelierten Elektronensystemen

[Cuvillier Verlag](#)

Journal of the Physical Society of Japan

Thermal Transport in Strongly Correlated Rare-Earth Intermetallic Compounds

[Springer](#) This thesis explores thermal transport in selected rare-earth-based intermetallic compounds to answer questions of great current interest. It also sheds light on the interplay of Kondo physics and Fermi surface changes. By performing thermal conductivity and electrical resistivity measurements at temperatures as low as 25mK, the author demonstrates that the Wiedemann-Franz law, a cornerstone of metal physics, is violated at precisely the magnetic-field-induced quantum critical point of the heavy-fermion metal YbRh2Si2. This first-ever observation of a violation has dramatic consequences, as it implies a breakdown of the quasiparticle picture. Utilizing an innovative technique to measure low-temperature thermal transport isothermally as a function of the magnetic field, the thesis interprets specific, partly newly discovered, high-field transitions in CeRu2Si2 and YbRh2Si2 as Lifshitz transitions related to a change in the Fermi surface. Lastly, by applying this new technique to thermal conductivity measurements of the skutterudite superconductor LaPt4Ge12, the thesis proves that the system is a conventional superconductor with a single energy gap. Thus, it refutes the widespread speculations about unconventional Cooper pairing in this material.

Low Temperature Physics

24th International Conference on Low Temperature Physics; LT24

[American Institute of Physics](#) This book represents recent cutting-edge developments in low temperature physics, reported at one of the largest international conferences in physics. The subjects covered are superconductivity, magnetism, quantum gases, quantum liquids and solids, electronic properties of solids, low-temperature experimental techniques, cryogenics, and applications.

Low Temperature Physics

24th International Conference on Low Temperature Physics, LT24, Orlando, Florida, 10-17 August 2005

Heavy-Fermion Systems

[Elsevier](#) The book on Heavy-Fermion Systems is a part of the Book series "Handbook of Metal Physics", each volume of which is written to facilitate the research of Ph.D. students, faculty and other researchers in a specific area. The Heavy-Fermions (sometimes known as Heavy-Electrons) is a loosely defined collection of intermetallic compounds containing rare-earth (mostly Ce) or actinide (mostly U) elements. These unusual names were given due to the large effective mass (100-1,000 times greater than the mass of a free electron) below a critical temperature. They have a variety of ground states including superconducting, antiferromagnetic, paramagnetic or semiconducting. Some display unusual magnetic properties such as magnetic quantum critical point and metamagnetism. This book is essentially a summary as well as a critical review of the theoretical and experimental work done on Heavy Fermions. · Extensive research references. · Comprehensive review of a very rapidly growing number of theories. · Summary of all important experiments. · Comparison with other highly correlated systems such as High-Tc Superconductors. · Possible Technological applications.

Proceedings of the VI Latin American Workshop on Magnetism, Magnetic Materials and Their Applications

7-11 April 2003, Chihuahua, Mexico

Rastertunnelmikroskopie und-spektroskopie an Ruthenaten und der violetten Lithium-Molybdän-Bronze

[kassel university press GmbH](#) Im Fokus dieser Arbeit steht die Analyse der mikroskopischen und elektronischen Struktur der Oberfläche funktionaler Materialien. Diese zeichnen sich dadurch aus, dass sich ihre Eigenschaften gezielt auf gewünschte technologische Anwendungen abstimmen lassen. Erreicht werden kann das zum Beispiel mit Materialien, die in unterschiedlichen konkurrierenden Grundzuständen vorliegen und dadurch auf äußere Einflüsse, wie elektrische oder magnetische Felder, reagieren können. Die äußere Stimulation kann dann genutzt werden, um zwischen den unterschiedlichen Eigenschaften des Materials zu wählen. Materialien, die sich als funktionale Materialien eignen, besitzen komplexe physikalische Eigenschaften, die es dem Material erst ermöglichen, vielfältige Eigenschaften anzunehmen. Ein grundlegendes Verständnis ihrer physikalischen Eigenschaften und deren Ursachen ist daher notwendig, um funktionale Materialien gezielt manipulieren zu können.

Lecture Notes on Electron Correlation and Magnetism

[World Scientific](#) Readership: Graduate students and researchers in condensed matter physics.

Artificial Black Holes

[World Scientific](#) Physicists are pondering on the possibility of simulating black holes in the laboratory by means of various "analog models". These analog models, typically based on condensed matter physics, can be used to help us understand general relativity (Einstein's gravity); conversely, abstract techniques developed in general relativity can sometimes be used to help us understand certain aspects of condensed matter physics. This book contains 13 chapters — written by experts in general relativity, particle physics, and condensed matter physics — that explore various aspects of this two-way traffic.

Strongly Correlated Fermi Systems

A New State of Matter

[Springer Nature](#) This book focuses on the topological fermion condensation quantum phase transition (FCQPT), a phenomenon that reveals the complex behavior of all strongly correlated Fermi systems, such as heavy fermion metals, quantum spin liquids, quasicrystals, and two-dimensional systems, considering these as a new state of matter. The book combines theoretical evaluations with arguments based on experimental grounds demonstrating that the entirety of very different strongly correlated Fermi systems demonstrates a universal behavior induced by FCQPT. In contrast to the conventional quantum phase transition, whose physics in the quantum critical region are dominated by thermal or quantum fluctuations and characterized by the absence of quasiparticles, the physics of a Fermi system near FCQPT are controlled by a system of quasiparticles resembling the Landau quasiparticles. The book discusses the modification of strongly correlated systems under the action of FCQPT, representing the "missing" instability, which paves the way for developing an entirely new approach to condensed matter theory; and presents this physics as a new method for studying many-body objects. Based on the authors' own theoretical investigations, as well as salient theoretical and experimental studies conducted by others, the book is well suited for both students and researchers in the field of condensed matter physics.

Spin Fluctuations in Itinerant Electron Magnetism

[Springer Science & Business Media](#) Ferromagnetism of metallic systems, especially those including transition metals, has been a controversial subject of modern science for a long time. This controversy stems from the apparent dual character of the d-electrons responsible for magnetism in transition metals, i.e., they are itinerant electrons described by band theory in their ground state, while at finite temperatures they show various properties that have long been attributed to a system consisting of local magnetic moments. The most familiar example of these properties is the Curie-Weiss law of magnetic susceptibility obeyed by almost all ferromagnets above their Curie temperatures. At first the problem seemed to be centered around whether the d-electrons themselves are localized or itinerant. This question was settled in the 1950s and early 1960s by various experimental investigations, in particular by observations of d-electron Fermi surfaces in ferromagnetic transition metals. These observations are generally consistent with the results of band calculations. Theoretical investigations since then have concentrated on explaining this dual character of d-electron systems, taking account of the effects of electron-electron correlations in the itinerant electron model. The problem in physical terms is to study the spin density fluctuations, which are neglected in the mean-field or one-electron theory, and their influence on the physical properties.

Frustrated Spin Systems (Third Edition)

[World Scientific Publishing Company](#) Frustrated spin systems have been first investigated five decades ago. Well-known examples include the Ising model on the antiferromagnetic triangular lattice studied by G H Wannier in 1950 and the Heisenberg helical structure discovered independently by A Yoshimori, J Villain and T A Kaplan in 1959. However, extensive investigations on frustrated spin systems have really started with the concept of frustration introduced at the same time by G Toulouse and by J Villain in 1977 in the context of spin glasses. The frustration is generated by the competition of different kinds of interaction and/or by the lattice geometry. As a result, in the ground state all bonds are not fully satisfied. In frustrated Ising spin systems, a number of spins behave as free spins. In frustrated vector spin systems, the ground-state configuration is usually non-collinear. The ground state of frustrated spin systems is therefore highly degenerate and new induced symmetries give rise to unexpected behaviors at finite temperatures. Many properties of frustrated systems are still not well understood at present. Theoretically, recent studies shown in this book reveal that established theories, numerical simulations as well as experimental techniques have encountered many difficulties in dealing with frustrated systems. In some sense, frustrated systems provide an excellent testing ground for approximations and theories. Experimentally, more and more frustrated materials are discovered with interesting properties for applications.

Electrons and Phonons

The Theory of Transport Phenomena in Solids

[Oxford University Press](#) This is a classic text of its time in condensed matter physics.

Holographic Quantum Matter

[MIT Press](#) A comprehensive overview of holographic methods in quantum matter, written by pioneers in the field. This book, written by pioneers in the field, offers a comprehensive overview of holographic methods in quantum matter. It covers influential developments in theoretical physics, making the key concepts accessible to researchers and students in both high energy and condensed matter physics. The book provides a unique combination of theoretical and historical context, technical results, extensive references to the literature, and exercises. It will give readers the ability to understand the important problems in the field, both those that have been solved and those that remain unsolved, and will enable them to engage directly with the current literature. The book describes a particular interface between condensed matter physics, gravitational physics, and string and quantum field theory made possible by holographic duality. The chapters cover such topics as the essential workings of the holographic correspondence; strongly interacting quantum matter at a fixed commensurate density; compressible quantum matter with a variable density; transport in quantum matter; the holographic description of symmetry broken phases; and the relevance of the topics covered to experimental challenges in specific quantum materials. Holographic Quantum Matter promises to be the definitive presentation of this material.

Decarbonising the World's Economy

Assessing the Feasibility of Policies to Reduce Greenhouse Gas Emissions

[World Scientific](#) Too often amongst policy makers and thought leaders an assumption is made that we must make a choice between tackling climate change and having a strong economy; tackling climate change and allowing poorer nations to develop; tackling climate change and having a secure energy system. However, a decade of advanced modelling tested against historical data has provided wide evidence that well-chosen policies can be implemented that avoid these apparent either/or choices. This highly interdisciplinary book provides an overview of potential pathways for the decarbonisation of the global economy. By examining the entire global economy, we show policy-makers and thought-leaders that greatly reducing the risks of climate change can be consistent with energy security, economic development in poor nations, and vibrant economies in already developed nations. Advanced models of the relationships between the economy, energy and climate change pioneered at the Cambridge Centre for Climate Change Mitigation Research (4CMR) over the past decade provides a sound evidence base for decisions. This book examines not only the impacts of policies, but also the feasibility of bringing them forward and the ways in which energy, climate and economic policies can and must be joined up if climate, energy and economic goals are to be met globally. Economists, physicists, engineers, policy analysts, environmental scientists, climate scientists, political analysts, lawyers and computational scientists are brought together for the first time to produce analyses that make up a unique approach to a global problem that must be addressed sooner rather than later. Contents: Introduction (Terry Barker) The Case for Decarbonisation (Douglas Crawford-Brown and Martin Sewell) Policies and Measures for Mitigating Climate Change (Paul Haynes and Yongfu Huang) Scenario Design for a Global Low-carbon Economy (Jun Li and Aleix Altimiras-Martin) Modelling Decarbonisation Scenarios (Annela Anger, Terry Barker and Mark Syddall) The Economic Feasibility of Policies for Decarbonisation (Terry Barker, Annela Anger and Hector Pollitt) Feasibility of Decarbonisation from a Technology Perspective (J-F Mercure and Pablo Salas) Feasibility of Reducing Emissions by End-use Sector (Scott Kelly, Andrew Skelton and Aleix Altimiras-Martin) From Theory to Practice: Climate Policy and Political Feasibility (Sonja Klinsky and Michael Grubb) Co-impacts of a Decarbonised Economy (Douglas Crawford-Brown and Ann Thompson) Conclusions (Terry Barker) Readership: Academics and policy makers interested in forming policies that target energy, climate and economic issues. Key Features: Conclusions are based on a decade of developing some of the most advanced models of links between energy, economic and environmental issues Examines the entire global economy, showing how policies and actions in any one nation influence behaviours in other nations Highly interdisciplinary content, with analyses produced by economists, physicists, engineers, policy analysts, environmental scientists, climate scientists, political analysts, lawyers and computational scientists Keywords: Climate Change; Climate Policy; Economic Development; Environment; Energy Policy; Low Carbon Technology

The Kondo Problem to Heavy Fermions

[Cambridge University Press](#) 'a superb introduction to this fascinating field.' Physics Today

Novel Superconductivity

[Springer Science & Business Media](#) The Novel Mechanisms of Superconductivity Conference was initially conceived in the early part of 1986 as a small, 2-1/2 day workshop of 40-70 scientists, both theorists and experimentalists interested in exploring the possible evidence for exotic, non phononic superconductivity. Of course, the historic discoveries of high temperature oxide superconductors by Bednorz and Mftler and the subsequent enhancements by the Houston/Alabama groups made such a small conference impractical. The conference necessarily had to expand, 2-1/2 days became 4-1/2 days and superconductivity in the high Tc oxides became the largest single topic in the workshop. In fact, this conference became the first major conference on this topic and thus, these proceedings are also the first major publication. However, heavy fermion, organic and low carrier concentration superconductors remained a very important part of this workshop and articles by the leaders in these fields are included in these proceedings. Ultimately the workshop hosted nearly 400 scientists, students and media including representatives from the major research groups in the U.S., Europe, Japan and the Soviet Union.

Theory Of Interacting Fermi Systems

[CRC Press](#) This book provides a detailed exposition of field theoretical methods as applied to zero temperature Fermi liquids. Special attention is paid to the concept of quasiparticles in normal Fermi liquids. The book emphasizes methods and concepts more than specific applications.

The Critical Point

A Historical Introduction To The Modern Theory Of Critical Phenomena

[CRC Press](#) The relationship between liquids and gases engaged the attention of a number of distinguished scientists in the mid 19th Century. In a definitive paper published in 1869, Thomas Andrews described experiments he performed on carbon dioxide and from which he concluded that a critical temperature exists below which liquids and gases are distinct phases of matter, but above which they merge into a single fluid phase. During the years which followed, other natural phenomena were discovered to which the same critical point description can be applied - such as ferromagnetism and solutions. This book provides an historical account of theoretical explanations of critical phenomena which ultimately led to a major triumph of statistical mechanics in the 20th Century - with the award of the Nobel Prize for Physics

Superconductivity in Ternary Compounds II

Superconductivity and Magnetism

[Springer](#)

Materials and Mechanisms of Superconductivity - High Temperature Superconductors

[North Holland](#) The discovery of high temperature superconductivity has not only opened many possibilities for potential technical applications, but has also provided a unique, challenging research subject for condensed matter physics and material sciences. High temperature superconductivity appears in systems with strong electron correlation and constitutes one of the key issues in condensed matter physics. The understanding of its mechanism will therefore greatly promote the future developments of this branch of science. During the last ten years great progress has been made in both fundamental and application-oriented research. Expanding knowledge of the physical properties in the superconducting as well as the normal state in preparing the way to an understanding of the underlying mechanisms. The accumulated experience in materials processing enables technical applications. All these aspects of high-Tc superconductivity and recent work on "traditional" superconductors have been exposed at the Beijing conference. The present volume is a separate edition of part I of the extensive Proceedings of the Fifth International Conference on Materials and Mechanisms of Superconductivity - High Temperature Superconductors. It contains the plenary, tutorial and invited papers, and gives a comprehensive account of the state-of-the-art as of March 1997.

The Vortex State

[Springer Science & Business Media](#) One of the most spectacular consequences of the description of the superfluid condensate in superfluid He or in superconductors as a single macroscopic quantum state is the quantization of circulation, resulting in quantized vortex lines. This book draws no distinction between superfluid He3 and He4 and superconductors. The reader will find the essential introductory chapters and the most recent theoretical and experimental progress in our understanding of the vortex state in both superconductors and superfluids, from lectures given by leading experts in the field, both experimentalists and theoreticians, who gathered in Cargèse for a NATO ASI. The peculiar features related to short coherence lengths, 2D geometry, high temperatures, disorder, and pinning are thoroughly discussed.

Modern Condensed Matter Physics

[Cambridge University Press](#) Comprehensive and accessible coverage from the basics to advanced topics in modern quantum condensed matter physics.

Valence Instabilities and Related Narrow-Band Phenomena

[Springer Science & Business Media](#) Those well-intending workers, especially theorists, who have viewed hungrily the mixed valence problem, but have not yet made the bold leap, might be comforted to learn that the Rochester conference left the virginal state of that problem essentially intact. That is not to say that the event was prosaic. Indeed, the conferees exhibited a level of effervescence appropriate to the freshness and challenge of the problem at hand. If the meeting failed to solve major questions, it at least established several guidelines. One is that future experimental efforts, at least on a short time scale, might be spent most profitably on those substances which exhibit consistent, and hence probably intrinsic, behavior from laboratory to laboratory. A recurring message, not always subtle, to the-theorists was that piecemeal approaches to the mixed valence problem, characteristic of much of the work to date, are of limited usefulness. For at the core of the problem one has a melange of boot-strapping interactions which must be sorted out and dealt with properly. Para phrasing Phil Anderson (see Epilogue), the mixed valence problem is in the same category of problems which are failing to be done in field theory these days.

High Pressure Measurement Techniques

Physics of Transition Metal Oxides

[Springer Science & Business Media](#) The fact that magnetite (Fe₃O₄) was already known in the Greek era as a peculiar mineral is indicative of the long history of transition metal oxides as useful materials. The discovery of high-temperature superconductivity in 1986 has renewed interest in transition metal oxides. High-temperature superconductors are all cuprates. Why is it? To answer to this question, we must understand the electronic states in the cuprates. Transition metal oxides are also familiar as magnets. They might be found stuck on the door of your kitchen refrigerator. Magnetic materials are valuable not only as magnets but as electronics materials. Manganites have received special attention recently because of their extremely large magnetoresistance, an effect so large that it is called colossal magnetoresistance (CMR). What is the difference between high-temperature superconducting cuprates and CMR manganites? Elements with incomplete d shells in the periodic table are called transition elements. Among them, the following eight elements

with the atomic numbers from 22 to 29, i. e. , Ti, V, Cr, Mn, Fe, Co, Ni and Cu are the most important. These elements make compounds with oxygen and present a variety of properties. High-temperature superconductivity and CMR are examples. Most of the textbooks on magnetism discuss the magnetic properties of transition metal oxides. However, when one studies magnetism using traditional textbooks, one finds that the transport properties are not introduced in the initial stages.

Cyclotron Orbits

A 709 Ray-trace Program for Cylindrically Symmetric Magnetic Fields

Iron-Based Superconductivity

Springer This volume presents an in-depth review of experimental and theoretical studies on the newly discovered Fe-based superconductors. Following the Introduction, which places iron-based superconductors in the context of other unconventional superconductors, the book is divided into three sections covering sample growth, experimental characterization, and theoretical understanding. To understand the complex structure-property relationships of these materials, results from a wide range of experimental techniques and theoretical approaches are described that probe the electronic and magnetic properties and offer insight into either itinerant or localized electronic states. The extensive reference lists provide a bridge to further reading. Iron-Based Superconductivity is essential reading for advanced undergraduate and graduate students as well as researchers active in the fields of condensed matter physics and materials science in general, particularly those with an interest in correlated metals, frustrated spin systems, superconductivity, and competing orders.

26th Southern Biomedical Engineering Conference SBEC 2010 April 30 - May 2, 2010 College Park, Maryland, USA

Springer Science & Business Media The 26th Southern Biomedical Engineering Conference was hosted by the Fischell Department of Bioengineering and the A. James Clark School of Engineering from April 30 - May 2 2010.. The conference program consisted of 168 oral presentations and 21 poster presentations with approximately 250 registered participants of which about half were students. The sessions were designed along topical lines with student papers mixed in randomly with more senior investigators. There was a Student Competition resulting in several Best Paper and Honorable Mention awards. There were 32 technical sessions occurring in 6-7 parallel sessions. This Proceedings is a subset of the papers submitted to the conference. It includes 147 papers organized in topical areas. Many thanks go out to the paper reviewers who significantly improved the clarity of the submitted papers.

Quantum Fluids and Solids

Springer Science & Business Media The second International Symposium on Quantum Fluids and Solids came to pass during 23-27 Jan. 1977 as the fourth and concluding part of the seventeenth consecutive running of the Sanibel Symposium Series. With approximately 120 participants from eleven countries (including, for the first time, the USSR), we found it easy to obtain a selection of papers which was fairly comprehensive. Indeed, our problem was an embarrassment of riches; in spite of our solemn vows not to crowd the schedule, we ended up with an intense program! By far, the majority of the papers presented are represented in this volume. We are indebted to many persons and organizations for their contributions to the Symposia. First, we thank Prof. Per-Olov Lowdin, Director of the Quantum Theory Project and originator of the Sanibel Symposia. Without his patient, indulgent cooperation our task would have been vastly more difficult. We are grateful to Prof. F. Eugene Dunnam, Chairman of the Dept. of Physics and Astronomy, for providing Departmental support of our initial or ganizing expenses. Approximately one-half of the total cost of the Symposium was borne by a joint grant from the National Science Foundation and the U. S. Air Force Office of Scientific Research. We thank the program officers, Dr. C. Satterthwaite and Dr. D.

High Performance Soft Magnetic Materials

Springer This book provides comprehensive coverage of the current state-of-the-art in soft magnetic materials and related applications, with particular focus on amorphous and nanocrystalline magnetic wires and ribbons and sensor applications. Expert chapters cover preparation, processing, tuning of magnetic properties, modeling, and applications. Cost-effective soft magnetic materials are required in a range of industrial sectors, such as magnetic sensors and actuators, microelectronics, cell phones, security, automobiles, medicine, health monitoring, aerospace, informatics, and electrical engineering. This book presents both fundamentals and applications to enable academic and industry researchers to pursue further developments of these key materials. This highly interdisciplinary volume represents essential reading for researchers in materials science, magnetism, electrodynamics, and modeling who are interested in working with soft magnets.

Physical Chemistry of Solids

Basic Principles of Symmetry and Stability of Crystalline Solids

World Scientific This book is about the underlying principles of symmetry, thermodynamics and electronic structure that pertain to crystalline solids. After years of teaching graduate students in the areas covered, the author has a good idea of what major notions of group theory and thermodynamics are useful to students of solid state chemistry, and of what fundamental concepts are necessary for a clear understanding. Thus the book deals with lattice symmetry, space groups, reciprocal space, Landau theory, X-ray diffraction, heterogeneous equilibria and simple band theory, in a rigorous and thorough treatment.

Quantum Mechanics

Symbolism of Atomic Measurements

Springer Science & Business Media A unique legacy, these lecture notes of Schwinger's course held at the University of California at Los Angeles were carefully edited by his former collaborator Berthold-Georg Englert and constitute both a self-contained textbook on quantum mechanics and an indispensable source of reference on this fundamental subject by one of the foremost thinkers of twentieth century physics.

Neutron Scattering from Magnetic Materials

[Elsevier](#) **Neutron Scattering from Magnetic Materials** is a comprehensive account of the present state of the art in the use of the neutron scattering for the study of magnetic materials. The chapters have been written by well-known researchers who are at the forefront of this field and have contributed directly to the development of the techniques described. Neutron scattering probes magnetic phenomena directly. The generalized magnetic susceptibility, which can be expressed as a function of wave vector and energy, contains all the information there is to know about the statics and dynamics of a magnetic system and this quantity is directly related to the neutron scattering cross section. Polarized neutron scattering techniques raise the sophistication of measurements to even greater levels and gives additional information in many cases. The present book is largely devoted to the application of polarized neutron scattering to the study of magnetic materials. It will be of particular interest to graduate students and researchers who plan to investigate magnetic materials using neutron scattering. · Written by a group of scientist who have contributed directly in developing the techniques described. · A complete treatment of the polarized neutron scattering not available in literature. · Gives practical hits to solve magnetic structure and determine exchange interactions in magnetic solids. · Application of neutron scattering to the study of the novel electronic materials.

Ultracold Bosonic and Fermionic Gases

[Elsevier](#) The rapidly developing topic of ultracold atoms has many actual and potential applications for condensed-matter science, and the contributions to this book emphasize these connections. Ultracold Bose and Fermi quantum gases are introduced at a level appropriate for first-year graduate students and non-specialists such as more mature general physicists. The reader will find answers to questions like: how are experiments conducted and how are the results interpreted? What are the advantages and limitations of ultracold atoms in studying many-body physics? How do experiments on ultracold atoms facilitate novel scientific opportunities relevant to the condensed-matter community? This volume seeks to be comprehensible rather than comprehensive; it aims at the level of a colloquium, accessible to outside readers, containing only minimal equations and limited references. In large part, it relies on many beautiful experiments from the past fifteen years and their very fruitful interplay with basic theoretical ideas. In this particular context, phenomena most relevant to condensed-matter science have been emphasized. Introduces ultracold Bose and Fermi quantum gases at a level appropriate for non-specialists Discusses landmark experiments and their fruitful interplay with basic theoretical ideas
Comprehensible rather than comprehensive, containing only minimal equations

Solid Compounds of Transition Elements

[Trans Tech Publications Ltd](#) This volume contains the papers presented at the XXth International Conference on Solid Compounds of Transition Elements (SCTE2016), held at the Paraninfo Building of the University of Zaragoza, 11th-15th April 2016. The papers are representative of all the subjects covered by the Conference and have been arranged into seven chapters which encompass materials and properties, grouped by shared features or functionalities: Intermetallic compounds, Metal oxides, Magnetocaloric, thermoelectric and energy storage materials, Multifunctional materials, Strongly correlated and superconducting compounds, Molecular magnetism and Disordered materials.