Strong Coupling Theory Of High Temperature Superconductivity | a4fa6bac74e11de0cdcccb98dbbc78d59

Heavy-Fermion Systems
An algorithm for high order strong coupling expansions
The Standard Theory of Particle Physics
Strongly Coupled Plasma Physics
High-temperature Superconductivity (Bhtsc '92) - Proceedings Of The Beijing International Conference
The Origin of Mass and Strong Coupling Gauge Theories
Perspectives Of Strong Coupling Gauge Theories: Proceedings Of The 1996 International Workshop
Molecular Spectroscopy, 2 Volume Set
Group Theory and Numerical Analysis
Theoretical and Experimental Aspects of Valence Fluctuations and Heavy Fermions
Automotive, Mechanical and Electrical Engineering
Running Coupling Constant and Transition from Low to High Energies in Quantum Chromodynamics
Strong Coupling Gauge Theories in LHC Era
Theory of Superconductivity
Strong-Coupling Theory of High-Temperature Superconductivity
Electron-phonon Interaction in Oxide Superconductors
Strong-coupling Theory of High-temperature Superconductivity
Coherent A nomaly M ethod
High-Temperature Superconductivity
Helium Three Nuclear Science Abstracts
Theory of Superconductivity
Pushing the Frontiers of Atomic Physics
Proceedings of the Yamada Conference XVIII on Superconductivity in Highly Correlated Fermion Systems
Nuclear Science Abstracts
High-Temperature Superconductors
Studies of High Temperature Superconductors
Coherence In High Temperature Superconductors
Strong-Coupling Theory of High-Temperature Superconductivity
Advances in Theoretical Physics
Strong Coupling Gauge Theories and Effective Field Theories
Optical Trapping and Manipulation of Neutral Particles Using Lasers
Condensed Matter Physics
Recent Progress in MANY-BODY THEORIES
Electrostatic Effects in Soft Matter and Biophysics
Strongly Coupled Plasma Physics
Superconductivity in Ternary Compounds II
The Origin of Mass and Strong Coupling Gauge Theories
A Quest for Symmetry

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.

This text leads the reader from basic principles through detailed derivations to a description of the many interesting phenomena in conventional and high-temperature superconductors. Physical properties of novel superconductors, in particular the normal state, superconducting critical temperatures and critical fields, isotope effects, normal and superconducting gaps, tunnelling, angle-resolved photoemission, stripes and symmetries are described in a self-consistent fashion. The book divides naturally into two parts. Part I introduces the phenomenology of superconductivity, the microscopic BCS theory and its extension to the intermediate coupling regime. The first three chapters of this part cover generally accepted themes in the conventional theory of superconductivity, and serve as a good introduction to the subject. Chapter 4 describes what happens to the conventional theory when the coupling between electrons becomes strong. The second part of the book describes key physical properties of high-temperature superconductors.
superconductors and their theoretical interpretation. Alternative viewpoints are discussed, but the emphasis is placed on the bipolaron theory.

This is the proceedings of the third Nagoya workshop on Strong Coupling Gauge Theories (SCGT), after SCGT 88 and SCGT 90. As a tradition of the Nagoya SCGT workshops, the focus is on dynamical symmetry breaking with particular emphasis on the nontrivial fixed points and/or large anomalous dimension, which was actually the basis of walking technicolor, strong ETC technicolor and top quark condensate, etc. Special attention is also paid to the fixed point structure in supersymmetric gauge theories, which has recently been highlighted through duality arguments.

Written for researchers and academics, this monograph provides a detailed introduction to the strong-coupling theory of high-temperature superconductivity.

This volume includes discussion on new dynamical features in the light of (deconstruted/latticized) extra dimensions, holographic QCD, M oose/hidden local symmetry, and so on. New insights into the QCD as a prototype of strong coupling gauge theories as well as in its own right, particularly in hot and dense matter are included. Sample Chapter(s). The String in an Excited Baryon (230 K B). Contents: The String in an Excited Baryon (G "t Hooft); Mesons and Baryons from String Theory (S Sugimoto); Toy Model for M ixing of Two Chiral Nonets (A H Fariborz et al.); Strongly Interacting M atter at RHIC (C Nonaka); QED Corrections to Hadron and Quark M asses (Y Namekawa); Little Higgs M -Theory (H-C Cheng); Toward a Top-M ode ETC (H Fukano & K Y amawaki); On Cyclic Universes (P H Frampton); Large Gauge Hierarchy in GaugeOC Higgs Unification (K Takenaga); Partially Composite Two Higgs Doublet M odel (P K o); and other papers. Readership: Graduate students, academics and researchers in theoretical particle physics.

Applied Mechanics with SolidWorks aims to assist students, designers, engineers, and professionals interested in using SolidWorks to solve practical engineering mechanics problems. It utilizes CAD software, SolidWorks-based, to teach applied mechanics. SolidWorks here is presented as an alternative tool for solving statics and dynamics problems in applied mechanics courses. Readers can follow the steps described in each chapter to model parts and analyze them. A significant number of pictorial descriptions have been included to guide users through each stage, making it easy for readers to work through the text on their own. Instructional support videos showing the motions and results of the dynamical systems being analyzed and SolidWorks files for all problems solved are available to lecturers and instructors for free download.

The book gives a quite complete and up-to-date picture of the Standard Theory with an historical perspective, with a collection of articles written by some of the protagonists of present particle physics. The theoretical developments are described together with the most up-to-date experimental tests, including the discovery of the Higgs Boson and the measurement of its mass as well as the most precise measurements of the top mass, giving the reader a complete description of our present understanding of particle physics.

The present volume contains the texts of the invited talks delivered at the Fifth International Conference on Recent Progress in Many-Body Theories held in Oulu, Finland during the period 3-8 August 1987. The general format and style of the meeting followed closely those which had evolved from the earlier conferences in the series: Trieste 1978, Oaxtepec 1981, A llenberg 1983 and San Francisco 1985. Thus, the conferences in this series are intended, as far as is practicable, to cover in a broad and balanced fashion both the entire spectrum of theoretical tools developed to tackle the quantum many-body problem, and their major fields of application. One of the major aims of the series is to foster the exchange of ideas and techniques among physicists working in such diverse areas of application of many-body theories as nucleon-nucleon interactions, nuclear physics, astronomy, atomic physics
and molecular physics, quantum chemistry, quantum fluids and plasmas, and solid-state and condensed matter physics. A special feature of the present meeting however was that particular attention was paid in the programme to such topics of current interest in solid-state physics as high-temperature superconductors, heavy fermions, the quantum Hall effect, and disorder. A panel discussion was also organised during the conference, under the chairmanship of N. W. Ashcroft, to consider the latest developments in the extremely rapidly growing field of high-Tc superconductors.

This volume will contain both invited and contributed papers which focus on the search for new high-Tc materials, characterization of their physical properties and microstructures, basic applications and the application of high-Tc superconductors.

Strongly Coupled Plasma Physics covers the proceedings of the 24th Yamada Conference on Strongly Coupled Plasma Physics, held from August 29 to September 2, 1989 at Hotel Mount Fuji near Lake Yamanaka on the outskirts of Tokyo. The book focuses on the reactions, technologies, interactions, and transformations of charged particles. The selection first offers information on phase transitions in dense astrophysical plasmas and plasma thermodynamics and the evolution of brown dwarfs and planets, as well as solidification of dense astrophysical plasmas, evolution of brown dwarfs, and structure of Jupiter. The text then examines the discovery of low mass objects in Taurus and topics in X-ray astronomy from observations with GINGA. The publication ponders on proton abundance in hot neutron star matter; thermonuclear reaction rates of dense carbon-oxygen mixtures in white dwarfs; and quantum simulation of superconductivity. The text also examines dynamic simulation of mixed quantum-classical systems and Monte-Carlo simulations for the surface properties of the strongly coupled one-component plasma. The selection is a dependable reference for readers interested in strongly coupled plasma physics.

Theory of Superconductivity: From Weak to Strong Coupling leads the reader from basic principles through detailed derivations and a description of the many interesting phenomena in conventional and high-temperature superconductors. The book describes physical properties of novel superconductors, in particular, the normal state, superconducting crit

Superconductivity in Highly Correlated Fermion Systems documents the proceedings of the Yamada Conference XVIII on Superconductivity in Highly Correlated Fermion Systems held in Sendai, Japan, from August 31 to September 3, 1987. This book compiles selected papers on the experimental and theoretical advances in the study of superconductivity. The topics include the superconductivity and magnetism in heavy-electron materials, magnetoresistance of heavy-fermion compounds, and magnetic fluctuations and order in exotic superconductors. The fabrication and properties of thin superconducting oxide films, bipolaron models of superconductors, superconducting properties of superlattices, and flux quantization on quasicrystalline networks are also covered. This publication is recommended for physicists and students researching on the superconductivity in highly correlated fermion systems.

Charged particles in dense matter exhibit strong correlations due to the exchange and Coulomb interactions, and thus make a strongly coupled plasma. Examples in laboratory and astrophysical settings include solid and liquid metals, semiconductors, charged particles in lower dimensions such as those trapped in interfacial states of condensed matter or beams, dense multi-ionic systems such a superionic conductors and inertial-confinement-fusion plasmas. The aim of the conference was to elucidate the various physical processes involved in these dense materials. The subject areas covered include plasma physics, atomic and molecular physics, condensed matter physics and astrophysics.
Uniquely creates a strong bridge between molecular spectroscopy and quantum chemistry. This two-volume book consists of many reviews reporting new applications of quantum chemistry to molecular spectroscopy (Raman, infrared, near-infrared, terahertz, far-ultraviolet, etc.). It contains brief introductions to quantum chemistry for spectroscopists, and to the recent progress on molecular spectroscopy for quantum chemists. Molecular Spectroscopy: A Quantum Chemistry Approach examines the recent progress made in the field of molecular spectroscopy; the state of the art of quantum chemistry for molecular spectroscopy; and more. It offers multiple chapters covering the application of quantum chemistry to: visible absorption and fluorescence, Raman spectroscopy, infrared spectroscopy, near-infrared spectroscopy, terahertz spectroscopy, and far-ultraviolet spectroscopy. It presents readers with hydrogen bonding studies by vibrational spectroscopy and quantum chemistry, as well as vibrational spectroscopy and quantum chemistry studies on both biological systems and nano science. The book also looks at vibrational anharmonicity and overtones, and nonlinear and time-resolved spectroscopy. -Comprehensively covers existing and recent applications of quantum chemistry to molecular spectroscopy -Introduces the quantum chemistry for the field of spectroscopy and the advancements being made on molecular spectroscopy for quantum chemistry -Edited by world leading experts who have long standing, extensive experience and international standing in the field Molecular Spectroscopy: A Quantum Chemistry Approach is an ideal book for analytical chemists, theoretical chemists, chemists, biochemists, materials scientists, biologists, and physicists interested in the subject.

This book presents a systematic and coherent approach to phase transitions and critical phenomena, namely the coherent-anomaly method (CAM theory) based on cluster mean-field approximations. The first part gives a brief review of the CAM theory and the second part a collection of reprints covering the CAM basic calculations, the Blume-Emery-Griffiths model, the extended Baxter model, the quantum Heisenberg model, zero-temperature phase transitions, the KT-transition, spin glasses, the self-avoiding walk, contact processes, branching processes, the gas-liquid transition and even non-equilibrium phase transitions. Contents: Introduction to Phase Transitions Basic Scheme of the CAM Theory Extensions of Mean-Field Approximations Non-Universal Critical Phenomena Spin Glasses CAM in Quantum Spin Systems Percolation, SAW and DLA Stochastic Processes

Readership: Graduate students in materials science, mathematical physics, statistical mechanics and statistical physics. Keywords: Critical Phenomena; Phase Transition; Critical Point; Critical Exponent; Magnetic Phase Transition; Ising Model; Heisenberg Model; Mean-Field Theory; Cluster Mean-Field Approximation; Coherent Anomaly; Systematic Approach; Fluctuation; Critical Dynamics; Cluster-Variable Methods; Critical Slowing Down; Envelope Theory; Weiss Approximation; Bethe Approximation; Kinetically Ising Model; Potts Model; Epidemic Model; Power Series CAM; CAM; SAW; Lipowski; Suzuki Method; Suzuki-Trotter Decomposition; Series Expansion; Weak Universality; Spin Glass; Six-Vertex Model; Super-Effective-Field Theory; XY Model "The student can learn a great deal not only from the 90-page review by Suzuki himself, but also by studying the original reprinted sources." Journal of Statistical Physics

This volume presents the important recent progress in both theoretical and phenomenological issues of strong coupling gauge theories, with/without supersymmetry and extra dimensions, etc. Emphasis is placed on dynamical symmetry breaking with large anomalous dimensions governed by the dynamics near the nontrivial fixed point. Also presented are recent developments of the corresponding effective field theories, such as those including light spectra other than the Nambu-Goldstone particles. This book is a must for all those who are interested in dynamical symmetry breaking and effective field theories in a modern version. Contents: Light-Front Quantization of Gauge Theories (S J Brodsky); Significance of the Renormalization Constant of the Color Gauge Field (K Nishijima & M Chaichian); Mass Gap and Color Confinement in Yang-Mills Theory Based on Asymptotic Solutions of SD Equation (K-I Kondo); Strong Coupling Approach to Transverse Lattice QCD (S Dalley); Vector Manifestation of Chiral Symmetry (M Harada); Locking Internal and Space-Symmetries: Relativistic Vector Condensation (F Sannino); A Practical Gauge Invariant Construction of Abelian Chiral Gauge Theories on the Lattice (Y Kikukawa); Neutrino Masses in Theories with Dynamical Breaking of Electroweak and Extended Gauge Symmetries (T Appelquist & R Schrock); Dynamical Electroweak Symmetry Breaking from Extra Dimensions (M Hashimoto et al.); Classical Solutions...
Introducing the subject of superfluid helium three and polarized liquid helium three, this book is devoted to modern problems in many body physics specific to the quantum fluid helium three. Relationships between properties of helium three and topics in other fields are established including superconductivity, non-linear dynamics, acoustics, and magnetically polarized quantum systems. Among the chapters in this collection one finds valuable reference material and original research not published elsewhere. Advanced research topics are presented in a pedagogical manner, in considerable depth, and with appropriate introductory material sufficiently general to be suitable to the non-specialist.

Condensed Matter Theories, Volume 17

This book presents the current knowledge about superconductivity in high Tc cuprate superconductors. There is a large scientific interest and great potential for technological applications. The book discusses all the aspects related to all families of cuprate superconductors discovered so far. Beginning with the phenomenon of superconductivity, the book covers: the structure of cuprate HTSCs, critical currents, flux pinning, synthesis of HTSCs, proximity effect and SQUIDs, possible applications of high Tc superconductors and theories of superconductivity. Though a high Tc theory is still awaited, this book describes the present scenario and BCS and RVB theories. The second edition was significantly extended by including film-substrate lattice matching and buffer layer considerations in thin film HTSCs, brick-wall microstructure in the epitaxial films, electronic structure of the CuO2 layer in cuprates, s-wave and d-wave coupling in HTSCs and possible scenarios of theories of high Tc superconductivity.

High-temperature superconductivity has transformed the landscape of solid state science, leading to the discovery of new classes of materials, states of matter, and concepts. However, despite being over a quarter of a century since its discovery, there is still no single accepted theory to explain its origin. This book presents one approach, the strong-coupling or bipolaron theory, which proposes that high-temperature superconductivity originates from competing Coulomb and electron-phonon interactions. The author provides a thorough overview of the theory, describing numerous experimental observations, and giving detailed mathematical derivations of key theoretical findings at an accessible level. Applications of the theory to existing high-temperature superconductors are discussed, as well as possibilities of liquid superconductors and higher critical temperatures. Alternative theories are also examined to provide a balanced and informative perspective. This monograph will appeal to advanced researchers and academics in the fields of condensed matter physics and quantum-field theories.

The 2016 International Conference on Automotive Engineering, Mechanical and Electrical Engineering (AEMEE 2016) was held December 9-11, 2016 in Hong Kong, China. AEMEE 2016 was a platform for presenting excellent results and new challenges facing the fields of automotive, mechanical and electrical engineering. Automotive, Mechanical and Electrical Engineering brings together a wide range of contributions from industry and governmental experts and academics, experienced in engineering, design and research. Papers have been categorized under the following headings: Automotive Engineering and Rail Transit Engineering, Mechanical, Manufacturing, Process Engineering, Network, Communications and Applied Information Technologies, Technologies in Energy and Power, Cell, Engines, Generators, Electric Vehicles, System Test and Diagnosis, Monitoring and Identification, Video and Image Processing, Applied and Computational Mathematics, Methods, Algorithms and Optimization, Technologies in Electrical and Electronic, Control and Automation, Industrial Production, Manufacturing, Management and Logistics.
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High Energy Physics 99 contains the 18 invited plenary presentations and 250 contributions to parallel sessions presented at the International Europhysics Conference on High Energy Physics. The book provides a comprehensive survey of the latest developments in high energy physics. Topics discussed include hard high energy, structure functions, soft interactions, heavy flavor, the standard model, hadron spectroscopy, neutrino masses, particle astrophysics, field theory, and detector development.

Written for researchers and academics, this monograph provides a detailed introduction to the strong-coupling theory of high-temperature superconductivity.

At Copenhagen in June 1988, the 80th Anniversary of the birth of L D Landau, the much respected Soviet physicist and author of the Course on Theoretical Physics, published by Pergamon Press, was celebrated with an International Symposium in his honour. The papers presented at that meeting are published here, providing an overview of recent progress in theoretical physics, covering super-string theories, chaos, high Tc superconductivity and biomolecules.

This important volume contains selected papers and extensive commentaries on laser trapping and manipulation of neutral particles using radiation pressure forces. Such techniques apply to a variety of small particles, such as atoms, molecules, macroscopic dielectric particles, living cells, and organelles within cells. These optical methods have had a revolutionary impact on the fields of atomic and molecular physics, biophysics, and many aspects of nanotechnology. In atomic physics, the trapping and cooling of atoms down to nanokelvins and even picokelvin temperatures are possible. These are the lowest temperatures in the universe. This made possible the first demonstration of Bose–Einstein condensation of atomic and molecular vapors. Some of the applications are high precision atomic clocks, gyroscopes, the measurement of gravity, cryptography, atomic computers, cavity quantum electrodynamics and coherent atom lasers. A major application in biophysics is the study of the mechanical properties of the many types of motor molecules, mechanoenzymes, and other macromolecules responsible for the motion of organelles within cells and the locomotion of entire cells. Unique in vitro and in vivo assays study the driving forces, stepping motion, kinetics, and efficiency of these motors as they move along the cell's cytoskeleton. Positional and temporal resolutions have been achieved, making possible the study of RNA and DNA polymerases, as they undergo their various copying, backtracking, and error correcting functions on a single base pair basis. Many applications in nanotechnology involve particle and cell sorting, particle rotation, microfabrication of simple machines, microfluidics, and other micrometer devices. The number of applications continues to grow at a rapid rate. The author is the discoverer of optical trapping and optical tweezers. With his colleagues, he first demonstrated optical
levitation, the trapping of atoms, and tweezer trapping and manipulation of living cells and biological particles. This is the only review volume covering the many fields of optical trapping and manipulation. The intention is to provide a selective guide to the literature and to teach how optical traps really work.

Contents: Optical Levitation
- Trapping of Atoms and Biological Particles in the 1980-1990 Decade
- Use of Optical Tweezers to Study Single Motor Molecules
- Origin of tweezer Forces on macroscopic Particles Using Highly Focused Beams
- Rotation of Particles by Radiation
- Microchemistry
- Uses of Slow Atoms
- Role of All-Optical Traps and MOTs in Atomic Physics
- Feshbach Resonances
- Vortices and Frictionless Flow in Bose-Einstein Condensates
- Trapped Fermi Gases
- and other papers

Readership: Researchers and students of atomic physics, molecular physics, biophysics and nanotechnology; historians of science.

Keywords: This volume contains the proceedings of the University of Miami Workshop on the subject of "Electronic Structure and Mechanisms for High Temperature Superconductivity". The workshop was held at the James L. Knight Physics Building on the campus of the University of Miami, Coral Gables, 3-9 January 1991. Some 106 scientists from 12 countries attended this workshop, most of whom presented either invited or contributed papers.

The workshop's purpose was to have intensive discussions on both theoretical and phenomenological aspects of strong coupling gauge theories (SCGTs), with particular emphasis on the model buildings to be tested in the LHC experiments. Dynamical issues are discussed in lattice simulations and various analytical methods. This proceedings volume is a collection of the presentations made at the Workshop by many leading scientists in the field. Contents: AdS/QCD, Light-Front Holography, and the Nonperturbative Running Coupling (S J Brodsky et al.)

Study on Exotic Hadrons at B-Factories (T Iijima)
Integrating Out Holographic QCD Back to Hidden Local Symmetry (M Harada et al.)
Chiral Symmetry Breaking on the Lattice (H Fukaya)
Higgs Searches at the Tevatron (K Y amamoto)
Gauge-Higgs Unification at LHC (N M aru & N Okada)
Gauge-Higgs Dark Matter (T Y amashita)
Conformal Higgs, or Techni-Dilation — Composite Higgs Near Conformality (K Yamawaki)
Resizing Conformal Windows (O Antipin & K Tuominen)
Going Beyond QCD in Lattice Gauge Theory (G T Fleming)
The Latest Status of LHC and the EWSB Physics (S Asai) Standard Model and High Energy Lorentz Violation (D Arelmi)
Ratchet Model of Baryogenesis (T Takeuchi et al.)
and othe papers

Readership: Researchers and advanced graduate students in high energy physics.

Keywords: Strong Coupling Gauge Theories; Effective Field Theories; Conformal Gauge Dynamics; Discrete Light-Cone Quantization

Proceedings of the NATO Advanced Study Institute, Les Houches, France, 1-13 October 2000

During the Köln meeting (August 28-31, 1984), Iridia was chosen as the venue for the next International Conference on Valence Fluctuations. This was in recognition and appreciation of the work done, both experimental and theoretical, by the Iridian scientists in this area during the last decade. We decided to hold this Conference in the month of January, 1987 at Bangalore. The subject of Valence Fluctuations has kept itself alive and active as it has provided many shocks and surprises particularly among the Ce- and U-based intermetallides. The richness of many interesting physical phenomena occurring in mixed valent materials, the flexibility of modifying their physical properties (by alloying, for example) and the possibility of synthesizing a
wide variety of new such materials seem to be the key factors in this regard. Barely six months before this Conference, an International Conference on Anomalous Rare Earths and Actinides (ICA REA) had been held at Grenoble (July, 1986) which also focussed on mixed valence and heavy fermion phenomena. In spite of this, the response to this Conference was very enthusiastic and encouraging. Many interesting and important results were presented at this Conference which have been included in this volume.

The Workshop on Group Theory and Numerical Analysis brought together scientists working in several different but related areas. The unifying theme was the application of group theory and geometrical methods to the solution of differential and difference equations. The emphasis was on the combination of analytical and numerical methods and also the use of symbolic computation. This meeting was organized under the auspices of the Centre de Recherches Mathematiques, Universite de Montreal (Canada). This volume has the character of a monograph and should represent a useful reference book for scientists working in this highly topical field.

This important book contains selected research papers of Prof Bunji Sakita. Included are his pioneering papers on SU(6) symmetry, strong coupling theory, string theory, supersymmetry and the method of collective coordinates. There is also a vivid personal account of his journey in physics. The book brings to light some of the key concepts of modern high energy physics. Contents: Strong Coupling of the Multi-Partial Wave Meson Isotriplet (B Sakita) Generalization of Dual Models (J-L Gervais & B Sakita) Functional Approach to Strong-Coupling Theory in Static Models. I. Charge-Scalar Models (G C Branco et al.) Gauge Degrees of Freedom, External Charges, Quark Confinement Criterion in A 0 = 0 Canonical Formalism (J-L Gervais & B Sakita) SO(2N) Grand Unification in an SU(N) Basis (R N Mohapatra & B Sakita) Chiral Symmetry and Chiral Anomaly in Incommensurate Charge-Density-Wave System (Z-B Su & B Sakita) Local Chiral Symmetry and Charge-Density Waves in One-Dimensional Conductors (B Sakita & K Shizuya) and other papers. Readership: High energy physicists. Keywords: SU(6) Symmetry; Dual Resonance Models; Functional Integral; Supergauge Symmetry; Collective Coordinate; Field Theory of Strings; Stochastic Quantization; Soliton, Chiral Symmetry; Chiral Anomaly; Charge Density Wave. Reviews: "Especially interesting is the autobiographical introduction by a scientist born and educated in Japan but who has spent almost his entire professional career outside that country." CERN Courier