and Alloys. Among the topics covered in the subsequent chapters are vortex line structure and surface superconductivity. In selecting material for the book, the authors have drawn heavily on their own work and on work done in cooperation with deGennes. Their treatment is based on the Ginzburg–Landau theory of superconductivity, with which they are able to give a theoretical explanation for many of the reversible properties. The microscopic theory of superconductivity is introduced primarily to derive and justify the Ginzburg–Landau theory.

The second half of the book is mainly descriptive, because there is often no satisfactory theoretical analysis of the irreversible properties of type-II superconductors. Among the topics covered are flux trapping, flux movement and critical-current characteristics. In the final chapter, Thomas describes various possible applications for type-II superconductors.

The bibliography at the end of each chapter, as well as the author's detailed treatment of certain topics, makes the book suitable as a reference. However, enough introductory material is included to make the book self-contained and accessible to individuals without prior knowledge about superconductivity. Although the treatment of the reversible properties is somewhat mathematical, the book has been written with experimentalists in mind and should be useful to anyone with an interest in superconductivity.

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Dispersion Theories of Strong Interactions at Low Energy

By D. V. Shirkov, V. V. Serebryakov, V. A. Meshcheryakov
362 pp. Wiley (North-Holland, Amsterdam) New York, 1969. $19.50

This monograph describes work done by the authors and their colleagues during the last ten years. The work was carried out in some isolation from the informal discussions, although not from the published work, of theorists outside the Soviet Union. Those who have worked on similar problems will find it interesting to examine more closely the authors' ideas about physics, as well as some mathematical techniques, even though many will find nothing very new in the way of results. As an introduction to the authors' contributions, I have certainly found it more readable and lucid than their original papers. No doubt this is not only because it is a more extended and complete presentation, but also because the authors have themselves provided the translation.

The "Low Energy" in the title means that the authors restrict their attention to pion–nucleon and pion–pion scattering at energies where inelastic processes can be either neglected or replaced by a few parameters. They are concerned in part with the phenomenological description of the data, and in part with a critique of the bootstrap idea—that is, that hadron properties involve a self-consistent satisfaction of dispersion relations. Their point is that a closed, unique bootstrap is not possible within the low-energy domain as they consider it; very few would argue with this conclusion, although others ascribe two different reasons that are more directly motivated by experiment. Linearly rising Regge trajectories seem to force themselves on our attention, suggesting support for the Chew–Mandelstam idea of Regge poles as a fundamental concept and perhaps as a "boundary condition." Certainly with the advent of SU(3) it became clear that no dynamical scheme could possibly be complete that did not treat strange and nonstrange particles on an equal footing.

Although the book's topic may seem almost old-fashioned, low-energy hadron phenomenology is always in ferment, and renewed attention is being given to exploitation of analyticity properties in extracting significant parameters from experimental results. This book includes some original techniques and ideas that may be quite useful for this purpose. The discussion often utilizes kinematical approximations to clarify qualitative features; these approximations are now avoided by most workers, but their presence in a book helps to increase its readability. The calculations are presented clearly and in sufficiently explicit detail that a student preparing for research in this specialized area could read it with profit and understanding.

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new books

CONFERENCE PROCEEDINGS

Feedback and Dynamic Control of Plasmas, no. 1 (conf. proc. AIP Symposium on Feedback and Dynamic Control of Plasmas, Princeton, N. J., 1970). T. K. Chu, H. W. Hendel, eds. 364 pp. AIP, New York, 1970.

Hyperon Resonances-70. (Conf. proc., Duke University, Durham, N. C., 24, 25 April 1970.) E. C. Fowler, ed. 505 pp. Moore Publishing, Durham, N. C., 1970.

International Conference on Data Handling Systems in High-Energy Physics, Vols. 1, 2. (Conf. proc. Cambridge, Mass., 23–25 March 1970). D. H. Lord, B. W. Powell, eds. 505 pp. and 990 pp. CERN, Geneva, 1970.

Non-Solar X- and Gamma-Ray Astronomy. (Conf. proc., International Astronomical Union, Symposium no. 37, Rome, Italy, 8–10 May 1969.) L. Gratton, ed. 425 pp. Springer-Verlag, New York, 1971. $23.00

Proceedings of the Solar Eclipse Conference (conf. proc. East Carolina Univ., Greenville, N. C., 6–7 March 1970). R. M. Helms, ed. 55 pp. Ball State Univ. Team, N. C., 1970.

Proceedings of the Symposium on Turbulence of Fluids and Plasmas, Vol. 18. (Microwave Research Institute Symposia Series, New York, 16–18 April 1968.) J. Fox, ed. 511 pp. Wiley, N. Y., 1969. $17.00

Proceedings of the Tenth International Conference on the Physics of Semiconductors (conf. proc. Cambridge, Mass., 17–21 Aug. 1970). S. P. Keller, J. C. Hensel, F. Stern, eds. 866 pp. AEC, Washington, D. C., 1970. $3.00

The Spiral Structure of our Galaxy. (Conf. proc., International Astronomical Union, Symposium no. 38, Basel, Switzerland, 29 Aug.–14 Sept. 1969.) W. Becker, G. Contopoulos, eds. 478 pp. Springer-Verlag, New York, 1970, $24.00

NUCLEI

Facets of Physics. D. A. Bromley, V. W. Hughes, eds. 217 pp. Academic, New York, 1970. $11.50

Physics of Nuclei and Particles, Vol. 2. By P. Marimier, E. Sheldon. 1482 pp. Academic, New York, 1970. $19.50

Progress in Nuclear Physics, Vol. 12, part 2: Total Cross-Section Measurements. By G. Giacomelli. 225 pp. Pergamon, New York, 1970. $6.00

ATOMS, MOLECULES, CHEMICAL PHYSICS

Advances in Atomic and Molecular Physics, Vol. 6. 341 pp. D. R. Bates, I. Esterman, eds. Academic, New York, 1970. $18.00

Advances in Electronics and Electron Physics, Vol. 29. L. Marton, ed. 327 pp. Academic, New York, 1970. $18.00

Introduction to Chemical Physics. By J. C. Slater. (Originally published in 1939.) 521 pp. Dover, New York, 1970. $4.00

Magnetic Resonance, Principles and Applications. By R. T. Schumacher. 220 pp. Benjamin, New York, 1970. Cloth, $12.50; paper, $4.95

Molecular Photoelectron Spectroscopy. By D. W. Turner, C. Baker, A. D. Baker, C. R. Brundle. Wiley, New York, 1970. $19.50

Phase Diagrams, Vol. 3: The Use of Phase Diagrams in Electronic and Glass Technology. A. M. Alper, ed. 325 pp. Academic, New York, 1970. $16.50

Problems of Atomic Dynamics. By Max Born. (Originally published in 1926.) 200 pp. MIT Press, Cambridge, 1970, $2.95

Table of Ion Energies for Metastable Transitions in Mass Spectrometry. By J. H. Beynon, R. M. Capriolo, A. W. Kundred, R. B. Spencier. 499 pp. American Elsevier, New York, 1970. $22.50

ACOUSTICS

Underwater Acoustics. By L. W. Camp. 308 pp. Wiley, New York, 1970. $17.50

OPTICS

The Applications of Holography. By H. J. Caulfield, S. Lu. 138 pp. Wiley, New York, 1970. $9.95

Metode Optice Ale Spectroscopiei Hertziene. By I. I. Agarbiceanu, I. M. Popescu. 458 pp. Editura Academiei Republicii Socaliste Romania, Romania, 1970.

Progress in Quantum Electronics, Vol. 1, part 3: Non-Resonant Feedback in Lasers. J. H. Sanders, K. W. H. Stevens, eds. 185 pp. Pergamon, New York, 1970. $4.00

Vibrations Lumineuses Optique Cohérente: Maitrise de Physique, C2. By M. Franco. 259 pp. Dunod, Paris, 1970.

ELECTRICITY AND MAGNETISM

Electromagnetism. By J. C. Slater, N. H. Frank. (Originally published in 1947.) 240 pp. Dover, New York, 1970. $2.75

Microwave Electronics. By J. C. Slater. (Originally published in 1959.) 406 pp. Dover, New York, 1970. $3.50

Theory of Guided Electromagnetic Waves. By R. A. Waldron. 520 pp. Van Nostrand Reinhold, New York, 1970. $27.50

QUANTUM ELECTRONICS

Advances in Quantum Electronics, Vol. 1. D. W. Goodwin, ed. 274 pp. Academic, New York, 1970. $12.00

FLUIDS, PLASMAS

Equilibrium Critical Phenomena in Fluids and Mixtures: A Comprehensive Bibliography With Key-Word Descriptors. By M. S. Green, S. Michaels, S. Y. Larsen. 231 pp. National Bureau of Standards Special Publication 327, Washington, D. C., 1970

SOLIDS

Physics of Solids. By C. A. Wert, R. M. Thomson. (2nd edition) 522 pp. McGraw-Hill, New York, 1970. $12.95

Solid State Physics, Vols. 24, 25. H. Ehrenreich, F. Seitz, D. Turnbull, eds. 420 pp. Academic, New York, 1970. $24.00

Probleme Actuale Ale Fizicii Semiconductorilor. Cristian Constantinescu. 464 pp. Editura Academiei Republicii Socialiste Romania, Bucharest, Romania, 1970.

Progress in Low Temperature Physics, Vol. 6. C. J. Gorter, ed. 440 pp. American Elsevier (North-Holland), New York, 1970. $23.00

A Quantum Approach to the Solid State. By P. L. Taylor. 322 pp. Prentice-Hall, Englewood Cliffs, N. J., 1970. $13.95

Semiconductors and Semimetals, Vol. 6: Injection Phenomena. By K. Willardson, A. C. Beer, eds. 359 pp. Academic, New York, 1970. $19.50

Superconductivity and its Applications. By J. E. C. Williams. 213 pp. Pion Ltd., London, 1970. £3.00

CRYSTALS

Experimental Crystal Physics. By W. A. Wooster, A. Breton. (2nd edition) 150 pp. Oxford U. P., New York, 1970. $9.75

Fourier Methods in Crystallography. By G. N. Ramachandran, R. Srivivasan. 259 pp. Wiley, New York, 1970. $15.95

Multiplets of Transition-Metal Ions in Crystals. S. Sugano, Y. Tanable, H. Kamimura, Academic, New York, 1970. $17.50

LOW TEMPERATURE

Elements de Cryogéne. By R. R. Conte. 332 pp. Masson, Paris, 1970. 130 f

ASTRONOMY, SPACE, GEOPHYSICS

Celestial Mechanics, Vol. 1: Dynamical Principles and Transformation Theory. By Y. Hagihara. 689 pp. MIT Press, Cambridge, Mass., 1970. $25.00

Global Geophysics. By R. H. Tucker, A. H. Cook, H. M. Iyer, F. D. Stacey. 199 pp. American Elsevier, New York, 1970. $7.00

The Lunar Rocks. By B. Mason, W. G. Melson. 177 pp. Interscience, New York, 1970. $8.95

Physical Processes in Geology. By A. Johnson. 590 pp. Freeman, San Francisco, 1970. $14.75

THEORY AND MATHEMATICAL PHYSICS

An Introduction to Quantum Physics. By G. Sposito. 426 pp. Wiley, New York, 1970. $13.95

Applied Matrix and Tensor Analysis. By J. A. Eisele, R. M. Mason. 335 pp. Interscience, New York, 1970. $14.95

Atomic Theory: An Introduction to Wave Mechanics. By N. Tralli, F. R. Pomilla. 374 pp. McGraw-Hill, New York, 1969. $13.50

Fourier Analysis on Groups and Partial Wave Analysis. By R. Hermann. 302 pp. Benjamin, New York, 1969. Cloth, $17.50; paper, $7.95

Handbook of Electromagnetic Propagation in Conducting Media. By M. B. Krachman. Headquarters Naval Material Command, Washington, D. C., 1970. $3.00

Introduction to Electrodynamics and Radiation. W. T. Grandy, ed. 284 pp. Academic, New York, 1970. $12.50

Introduction a L'étude des Cosmologies. By H. Andrillat. 223 pp. Librairie Armand Colin, Paris, 1970.

Lectures in Mathematical Physics, Vol. 1. By R. Hermann. 475 pp. Benjamin, New York, 1970. $7.95

Lie Algebras and Quantum Mechanics. By R. Hermann. 320 pp. Benjamin, New York, 1970. Cloth, $17.50; paper, $7.95

The Lorentz Group and Harmonic Analysis. By W. Ruhl. 299 pp. Benjamin, New York, 1970. $16.00

Mathematical Methods of Physics. By J. Mathews, R. L. Walker. (2nd edition) 501 pp. Benjamin, New York, 1970. $17.50

Mathematical and Theoretical Physics, Vols. 1 and 2. By E. A. Hylleraas. Wiley,

New York, 1970. $15.00 each

Mécanique Quantique: Particule dans un Champ, Vol. 1: Equation de Schrodinger. By E. Durand. 676 pp. Masson, Paris, 1970. 160 f

Méthodes Numériques Pour La Prévision Du Temps. By G. I. Martchouk (P. Nepomiastchy, trans.). 344 pp. Librairie Armand Colin, Paris, 1970.

The Padé Approximant in Theoretical Physics. G. A. Baker, J. L. Gammel, eds. Academic, New York, 1970. $17.50

Quantum Mechanics of Atomic Spectra and Atomic Structure. By M. Mizushima. 419 pp. Benjamin, New York, 1970. $19.50

Reference Systems and Inertia. By B. E. Clotfelter. 116 pp. Iowa State U. P., Ames, Iowa, 1970. $3.50

Relativistic Mechanics. By R. D. Sard. 376 pp. Benjamin, New York, 1970. Cloth, $17.50; paper, $8.95

Relativity Reexamined. By L. Brillouin. 111 pp. Academic, New York, 1970. $6.75

Special Theory of Relativity. By C. W. Kilmister. 299 pp. Pergamon, New York, 1970. Cloth, $7.00; paper, $4.75.

Vector Bundles in Mathematical Physics, Vol. 1. By R. Hermann. 441 pp. Benjamin, New York, 1970. Cloth, $17.50; paper, $7.95

INSTRUMENTATION AND TECHNIQUES

Electron Beams, Lenses and Optics, Vol. 2. By A. B. El-Kareh, J. C. J. El-Kareh. 320 pp. Academic, New York, 1970. £8..3s.

Electron Diffraction. By T. B. Rymer. 165 pp. Barnes and Noble (Methuen, London), New York, 1970. $8.00

Far-Infrared Techniques. By M. F. Kimmitt. 153 pp. Pion Ltd., London, 1970. £2.50

Practical X-Ray Spectrometry. By R. Jenkins, J. L. De Vries. (2nd edition) 189 pp. Springer Verlag, New York, 1970. $7.80

GENERAL PHYSICS TEXTS

Atoms and Molecules: An Introduction for Students of Physical Chemistry. By M. Karplus, R. N. Porter. 620 pp. Benjamin, New York, 1970. Cloth, $17.50; paper, $7.95

Light and Living Matter, Vol. 1: The Physical Part. By R. K. Clayton. 148 pp. McGraw-Hill, 1970. Cloth, $4.50; paper, $2.95

HISTORY AND PHILOSOPHY

Analyses of Theories and Methods of Physics and Psychology. M. Radner, S. Winokur, eds. 441 pp. Univ. of Minn. Press, Minneapolis, 1970. $12.50

Astronomy, Vols. 1, 2: The Royal Institution Library of Science. B. Lovell, ed. 416 pp. and 397 pp. American Elsevier, New York, 1970. $27.50

Atoms and Powers, An Essay on Newtonian Matter-Theory and the Development of Chemistry. By A. Thackray. 326 pp. Harvard U. P., Cambridge, Mass., 1970. $12.00

History of Hydrology. By A. K. Biswas. 336 pp. American Elsevier (North-Holland), New York, 1970. $16.00

Physics and Man. R. Karplus, ed. 343 pp. Benjamin, New York, 1970. $3.95

Symmetries and Reflections, Scientific Essays. By E. P. Wigner. (Original edition, 1967) MIT Press, Cambridge, 1970. $3.95

Vorgeschichte des Plankschen Strahlungsgestzes. By Hans Kangro. 271 pp. Franz Steiner Verlag, Wiesbaden, Germany, 1970.

POPULARIZATIONS

Atomic Energy. By M. Gaines. 159 pp. Grosset and Dunlap, New York, 1970. $3.95

Exploring the Ocean. By Daniel Behrman. 89 pp. Unesco, New York, 1970.

Frontiers in Astronomy: Readings from Scientific American. 370 pp. Freeman, San Francisco, 1970. Cloth, $11.00; paper, $5.75

Handbook for Planet Observers. By Günter D. Roth (A. Helm trans.) 205 pp. Van Nostrand Reinhold, New York, 1970. $7.95

Seeing Beyond the Visible. A. Hewish, ed. 150 pp. American Elsevier, New York, 1970. $6.00

MISCELLANY

The AAAS Science Book List. H. J. Deason, ed. (3rd edition) American Association for the Advancement of Science, Washington, D. C., 1970. $9.00

Dealing with Data. By A. J. Lyon. 392 pp. Pergamon, New York, 1970. Hard, $8.00; paper, $5.50

Dictionary of Telecommunications. By R. A. Bones. 199 pp. Philosophical Library, New York, 1970. $15.00

Effective Management of Research and Development. By A. Gerstenfeld. 150 pp. Addison-Wesley, Reading, Mass., 1970. $7.95

Environmental Isotope Data No. 2: World Survey of Isotope Concentration in Precipitation (1964–65), Technical Report Series, no. 117. 403 pp. UNIPUB, New York, 1970. $8.00

Low Temperature Physics, A KWIC Index to the Conference Literature 1958–1969. By W. Duffy, Jr., J. A. Miller. 287 pp. Univ. of Santa Clara Press, Santa Clara, Calif., 1970.

McGraw-Hill Encyclopedia of Science and Technology, Vols. 1–15. D. I. Eggenberger, ed. (3rd edition) 1100 pp. McGraw-Hill, New York, 1971. $360.00; schools and libraries, $295.00

Science Year: The World Book Science Annual, 1971. W. H. Nault, ed. 441 pp. Field Enterprises Educational Corp., Chicago, 1970.

So You Have to Write a Technical Report: Elements of Technical Report Writing. By D. E. Gray. 117 pp. Information Resources Press, Washington, 1970. $3.25

Scientific Research in British Universities and Colleges, Vol. 1: Physical Sciences. 700 pp. British Information Services (Her Majesty's Stationery Office), New York, 1970. $17.10 □