

of functions such as divergence and curl in generalized coordinates. A final chapter points out ramifications of differential and integral theorems, as in irrotational and solenoidal fields, with fluid and electrical applications.

Many tensor concepts seem most easily taught with matrix notation instead of the summation convention used throughout this volume, but one can hardly object to use of the appropriate convention. I would like to have seen a closer tie to n -space, and regret the deletion of the author's preface. But such criticisms are minor in view of the book's excellence; it well complements Shilov's book.

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The reviewer is professor of mechanical engineering at the University of Washington. His special interest is the mathematics of linear systems.

Spins and moments

MAGNETIC RESONANCE AND RELAXATION. Conf. proc. (Colloque Ampère, Ljubljana, Yugoslavia, Sept. 1966). R. Blinc, ed. 1241 pp. North-Holland, Amsterdam, 1967. \$50.00

by Thomas A. Scott

Perhaps it was the enticement of a setting in Yugoslavia, or perhaps it was that there had not been a similar conference for two years previously; more likely it was the excellent planning of the organizing committee that was responsible for making the XIVth Colloque Ampère a major international conference and the largest one ever devoted primarily to nuclear magnetic resonance. More than 200 papers were delivered in 27 sessions over a period of four and a half days. Now after a delay of a year and a half, the proceedings containing the texts of 197 of the papers have been published.

Conference proceedings in general suffer from several faults. Because of the inevitable and often lengthy time lapse before publication, many of the contributions will have been made at least partially obsolete by prior publication of the work in journals, usually in greater detail and frequently with added information not available at the time of the conference. Furthermore, some authors tend not to give the same attention to the writing of these contributions as they do to a refereed journal article.

The present book does an exceptional job of rising above these faults, although readers will still look to the journals for the final word. However, the percentage of high-quality papers presented at the conference was remarkably large and the quality has been retained in the written version. Especially valuable are the 31 invited papers, a number of which are reviews that will not be published in the same form elsewhere. As a composite the papers constitute a valuable collection, reflecting the current status of the field.

Practically every aspect of nuclear-magnetic and electric-quadrupole resonance research of interest to physicists was covered in at least one session. Dynamic polarization, double resonance, acoustic resonance, NMR in metals including superconductors, NMR and NQR in solids, relaxation theory and experiment, and new experimental techniques received especially strong emphasis. The Mössbauer effect, optical methods in rf spectroscopy, EPR and ESR, and dielectric relaxation studies were also represented in one or more sessions each. Despite the length of the book (1241 pages), some of the longer papers have been edited and condensed. Unlike previous proceedings of Colloque Ampère that were dominantly written in French, about 85 percent of the present book is in English.

The book is handsomely (and, alas, expensively) printed. There is no other single volume that better displays the immense versatility of magnetic resonance.

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The reviewer is professor of physics at the University of Florida where he has been engaged in nuclear magnetic resonance and solid-state-physics research for a decade.

All the attributes of a good text

INTRODUCTION TO SPECIAL RELATIVITY. By Herman M. Schwartz. 458 pp. McGraw-Hill, New York, 1968. \$14.75

by Richard B. Zipin

An introduction to the special theory of relativity can easily become highly mathematical and perhaps boring to some physicists if the author is careless in his writing. Herman Schwartz of the University of Arkansas, the au-

thor of this new book in the well-known International Series in Pure and Applied Physics, does achieve a reasonable balance between the mathematics and the physics of his subject. The book should be well received by students of both disciplines.

Introduction to Special Relativity has all the attributes of a good textbook. The subject matter is not comprehensive, but carefully selected to reflect the author's preferences and his three purposes: to teach the special theory of relativity, to prepare the reader for a study of the general theory of relativity, and to give the student an adequate background in relativity theory to enable him to go on to subjects of current interest such as the theories of elementary particles and of plasmas. The book begins with a chapter on the basic ideas of classical mechanics, starting with Newton, followed by a chapter on the historical development of the special theory of relativity. After giving the reader an overall perspective of the subject with these preliminaries, the author is then free to discuss the various topics of interest in the order of their difficulty as this is the most logical order for a textbook from the pedagogical point of view. An exposition of Einstein's special theory of relativity follows the two preliminary chapters and this is succeeded by discussions of relativistic mechanics, tensor analysis, continuous media and the electromagnetic field. The final chapter treats relativistic quantum mechanics. The author's preferences and his ideas on what subjects are significant are obvious from the topics he concentrates on. The first four chapters require 130 pages, the next two 90 pages, and the final two chapters are each almost 100 pages in length.

The chapters are carefully divided into sections and all chapters include problems for the students. Answers to many of the problems are included, and the problems are used not only for the readers to test their own understanding of the subject, but also to extend the discussion in the text. The book includes thorough documentation in the footnoted references and in the selective bibliography. Supporting material, germane to particular chapters but not of absolute necessity, is taken up in appendices to half the chapters. Illustrations are used very sparingly but with good effect wherever they appear.