Mathematica Slovaca

Book Reviews

Terms of use:

BOOK REVIEWS

A. Kertész: LECTURES ON ARTINIAN RINGS. Edited by R. Wiegandt. Akadémiai Kiadó, Budapest 1987, 427 pages.

This book is the English edition and extension by the addition of six new chapters of the book by A. Kertész: Vorlesungen über arténische Ringe, Akadémiai Kiadó, Budapest 1968.

The book is concerned with the theory of artinian rings. Thi theory is thoroughly discussed in this book starting with the classical structure theory of rings. What is attractive about this book, from the pedagogical point of view, besides its clarity, is the large number of exercises follcwring each chapter and the careful development of the more important examples of rings.

The development of the theory requires no previous knowledge of rings and proceeds in the standard way via irreducible modules, the Jacobson radical and the density theorem for primitive rings. Then the results are sharpened for the Artinian rings. Besides the classical Wedderburn theorems, there are discussions of the complete reducibility of representations, the semisimplicity of group rings, and projective and injective modules.

New related topics, rarely treated elsewhere, complete the present English edition, such as rings of quotients, quasi — Frobenius rings, Connel's theorem on artinian group rings and Vámos's theorem on finite embedded modules.

Numerous recently obtained results are also included, e.g. Ke tész's theorem on noetherian rings to be artinian, Widiger's decemposition theorem, the Ayoub   Van Huyn theorem that every M H R ring is split and the Litoff — Anh theorem on simple rings with a non-zero socle.

The main text is divided into 15 chapters. Three of the new chapters (XI, XII and XIII) were supplied by G. Betsch, Chapter X and XV by A. Widiger, Chap er XIV and §§ 42, 55 and 56 by R. Wiegandt.

The list of references consists of 251 items. The book ends with the list of symbols (2pp.), the authors'index (3 pp.) and the subject index (6 pp.).

Juraj Kostra, Bratislava

Bolyai J.: APPENDIX, The Theory of Space (with introduction, comments, and addenda) edited by F. Kárteszi, Akadémiai Kiadó, Budapest 1987, 239 pages.

This is a revised edition of the memorial volume written by Professor F. Kárteszi on the occasion of the 150th anniversary of János Bolyai's birth. The context of the book is best characterized in the following passage of Prof. Kárteszi's preface to this English edition:

"Part I is a historical introduction which makes use of the latest literary sources. The Supplement, written for the English edition by Professor Barna Szénássy, completes this part and helps the foreign reader.

Part II contains the Latin original and its translation into present-day language. Though the translation follows the requirements of modern language and style, it accurately reflects the concise Latin text. Dissection into chapters not occurring in the origin il, changing notation to that used today, setting the illustrations at suitable places of the text, application of an up-to-date drawing

technique and, finally, the presence of some new illustrations, help to avoid unnecessary difficulties usually encountered when reading old prints and texts.

Part III is a series of informal short remarks divided into sections corresponding to those of the original work. Actually, with these remarks we try to make easier the comprehension of the text which, because of its conciseness, can only be read with close attention, thinking the material over and over again. This happens once by completion, once by reformulation and more detailed explanation in order to dissolve conciseness, yet another time by addition and further argument.

In Part IV, by picking out and sketching some important topics, we attempt to indicate the effect that may be traced in the development of modern mathematics after János Bolyai's space theory had become generally known."

The book presents, in a masterful and concise way, the development of ideas which marked a new epoch in the history of mathematics. We recommend this book strongly to anyone with an interest in geometry and the history of mathematics.

Štefan Porubský, Bratislava

PROBABILITY THEORY AND MATHEMATICAL STATISTICS WITH APPLICATIONS
Edited by: W. Grossmann, J. Mogyoródi, I. Vincze and W. Wertz. Akadémiai Kiadó, Budapest and Reidel, Dordrecht, 1988.

The volume contains the proceedings of the 5th Pannonian Symposium on Mathematical Statistics which was held at Visegrád, Hungary, 20—24 May 1985. The Pannonian Symposia have been organized alternatively in Austria and Hungary, thus the main contributors are statisticians from these, and from the neighbouring countries. More than half of the contributors to the proceedings of the 5th symposium are from Hungary, the others are from Czechoslovakia (7), FRG (3), USA (2), Austria, GDR, USSR, Canada, Jugoslavia, Egypt, Portugal (1).

The papers in Part A of the volume are devoted to probability, and those in Part B to statistics.

The contributions (22) in Part A are devoted to problems in probability theory such as the first passage problems for the Ehrenfest model (Baróty), a new proof of the Burkholder Davis Gundy inequality (Bassily), the length of the longest flat interval (Csáki, Földes), the full protocol problem (Elek, Grill), convergence of the regression type martingale fields (Fazekas), martingales whose index set is a tree (Frideli, Schipp), random walks in multidimensional time (Galambos, Kátai), limit distribution of sums of random variables reduced mod 2π (Gyires), stochastic differential equations (Gyöngy), the large deviations theorem for the Gibbs random fields (Janžura), some kinds of event algebras in the nonclassical probability theory (Kalmár), bivariate geometric compounding (Kováts), the inhomogeneous Markov chain (Lakatos), extensions of the extremal limit problems (Martins, Pestana), middle ranked decision in the secretary problem (Móri), random linear secret-key encryption (Nemetz, Ureczky), renewal processes (Peručič), exchangeable random variables (Plachky), multidimensional stochastic processes with continuous time (Pogány), autophage and allelophage probability distributions (Székely), the probability characterization theorem (Vincze), arithmetical properties of the multiplicative structure of probability distribution functions (Zempléni).

The topics in Part B are the estimation theory, testing hypotheses and stochastic methods and models. The contributions are devoted to periodic autoregressive processes (Anděl), state estimation of dynamical systems (Apoyan and Kotoyants), estimation of reliability (Hurt), goodness of-fit tests (Kosik and Sarkadi), statistical properties of estimates in nonlinear models (Pázman), asymptotic properties of rejective sampling (Prášková), the general theory of unbiased estimation (Rüs-

chendorf), the shrinkage least squares estimation (Saleh and Sen), the estimation of cross dispersion functions (Szeidl), transfer functions in control theory (Terdik), the convergence of weighted sums (Thrum), stochastic kinetics (Tóth), asymptotic normality in processes (Veres), M. L. estimates in ARMA processes (Veres), robust estimation (Víšek), limit properties for the likelihood ratio (Vostrikova), estimatimation in linear models with censored data (Volf). The range of the topics is wide, many papers are well written and in a complete form (introduction to the subject, proofs) and the volume is recommended to specialists in probability and statistics.

A. Dvurečenskij,
A. Pázman, Bratislava

A. T. Fomenko, D. B. Fuchs, V. L. Gutenmacher: HOMOTOPIC TOPOLOGY, Akadémiai Kiadó Budapest, 1986, 310 pages.

The book of the well-known Soviet mathematicians offers the reader a wide range of topics in algebraic topology. It is divided into five chapters.

In the first chapter the reader becomes familiar with the basic notions of the homotopy theory: CW complexes, covering spaces, fundamental groups and homotopy groups.

In the second chapter there are introduced homology and cohomology groups, homology groups of CW complexes are computed, some connections between homotopy groups and homology groups are considered and the chapter ends with the obstruction theory.

The third chapter deals with the spectral sequences and their applications to homology groups.

In the fourth chapter the cohomology operations are introduced with stress on stable operations, and Steenrod squares and Steenrod algebras are considered.

The last chapter deals with the Adams spectral sequence and its applications.

The book is supplemented by five appendices, a list of literature, the index of authors and the subject index. The book is recommended to readers with a certain knowledge of algebra and topology as well as some practise in reading mathematical texts. It is fully illustrated by Fomenko's suggestive pictures and contains many excercises inserted in the text.

Ladislav Mišík, Jr. Bratislava