



4-Manifolds and Kirby Calculus (Graduate Studies in Mathematics)

By András I. Stipsicz Robert E. Gompf

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The past two decades have brought explosive growth in 4-manifold theory. Many books are currently appearing that approach the topic from viewpoints such as gauge theory or algebraic geometry. This volume, however, offers an exposition from a topological point of view. It bridges the gap to other disciplines and presents classical but important topological techniques that have not previously appeared in the literature. Part I of the text presents the basics of the theory at the second-year graduate level and offers an overview of current research. Part II is devoted to an exposition of Kirby calculus, or handlebody theory on 4-manifolds. It is both elementary and comprehensive. Part III offers in depth a broad range of topics from current 4-manifold research. Topics include branched coverings and the geography of complex surfaces, elliptic and Lefschetz fibrations, h -cobordisms, symplectic 4-manifolds, and Stein surfaces. Applications are featured, and there are over 300 illustrations and numerous exercises with solutions in the book.

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Editorial Review

Review

This book is important and valuable in that both gives a comprehensive and accessible picture of an area which has developed rapidly in the past 20 years and also provides readers with techniques to begin research in the field. The book is pedagogically very strong, with many examples and exercises. The material will not go out of date, and however the field may develop in the future, this will be an important reference for many years to come. --Bulletin of the London Mathematical Society

This book gives an excellent introduction into the theory of n -manifolds and can be strongly recommended to beginners in this field ... carefully and clearly written; the authors have evidently paid great attention to the presentation of the material ... contains many really pretty and interesting examples and a great number of exercises; the final chapter is then devoted to solutions of some of these ... this type of presentation makes the subject more attractive and its study easier. --European Mathematical Society Newsletter

A complete record of the folklore related to handle calculus ... All of the mathematical statements are given in absolutely precise language, and the notation and terminology used are well chosen ... a very comprehensive book ... Most low-dimensional topologists will want to have access to this as a reference book ... any student ... will be rewarded with a thorough understanding of this fascinating field. --Bulletin of the AMS

From the Publisher

I greatly recommend this wonderful book to any researcher in 4-manifold topology for the novel ideas, techniques, constructions, and computations on the topic, presented in a very fascinating way. I think really that every student, mathematician, and researcher interested in 4-manifold topology, should own a copy of this beautiful book.

Zentralblatt f"ur Mathematik

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