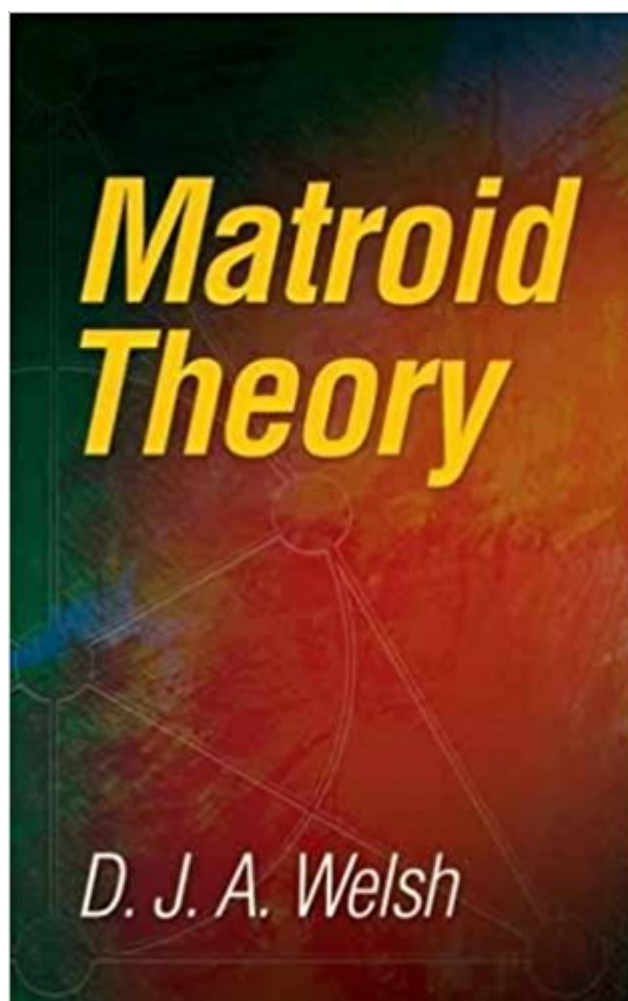


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Matroid Theory (Dover Books On Mathematics)



Synopsis

The theory of matroids connects disparate branches of combinatorial theory and algebra such as graph and lattice theory, combinatorial optimization, and linear algebra. Aimed at advanced undergraduate and graduate students, this text is one of the earliest substantial works on matroid theory. Its author, D. J. A. Welsh, ¹ ² Professor of Mathematics at Oxford University, ³ ⁴ has exercised a profound influence over the theory's development. The first half of the text describes standard examples and investigation results, using elementary proofs to develop basic matroid properties and referring readers to the literature for more complex proofs. The second half advances to a more sophisticated treatment, addressing a variety of research topics. Praised by the Bulletin of the American Mathematical Society as "a useful resource for both the novice and the expert," this text features numerous helpful exercises.

Book Information

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Customer Reviews

After a long period of being out of print, Welsh's classic text is now available again in a very affordable Dover edition. This is great news, not only for specialists in matroid theory but also for researchers in graph theory, combinatorial optimization, and combinatorial differentiable geometry, all of which use matroids. Those contemplating buying this book may want to know how it differs from other texts on the subject. The closest book is Oxley's. Oxley himself explains the difference in his introduction: "[Welsh's book] appeared during my second year at Oxford and it has been my

constant companion ever since. When I contemplated writing this book, the first question I had to answer was how should it differ from Welsh's book. This book attempts to blend Welsh's very graph-theoretic approach to matroids with the geometric approach of Rota's school that I learnt from Brylawski. Unfortunately, I cannot emulate Welsh's feat of providing, in a single volume, a complete survey of the current state of knowledge in matroid theory; the subject has grown too much. Therefore I have had to be selective. While the basic topics virtually select themselves, the more advanced topics covered here reflect my own research interests."While there is some overlap between the two books, Welsh's book contains a lot of material not available elsewhere. Two examples that come to mind immediately (because I had reason to look them up recently) are the topics of base-orderability and of strong and weak maps, but there are many others. Welsh's book is indispensable and it is a credit to Dover Press that they recognize its continuing value to this active area of current mathematical research.

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