

Ordered Sets

An Introduction with Connections from Combinatorics to Topology

The second edition of this highly praised textbook provides an expanded introduction to the theory of ordered sets and its connections to various subjects. Utilizing a modular presentation, the core material is purposely kept brief, allowing for the benefits of a broad exposure to the subject without the risk of overloading the reader with too much information all at once. The remaining chapters can then be read in almost any order, giving the text a greater depth and flexibility of use. Most topics are introduced by examining how they relate to research problems, some of them still open, allowing for continuity among diverse topics and encouraging readers to explore these problems further with research of their own.

A wide range of material is presented, from classical results such as Dilworth's, Szpilrajn's, and Hashimoto's Theorems to more recent results such as the Li-Milner Structure Theorem. Major topics covered include chains and antichains, lowest upper and greatest lower bounds, retractions, algorithmic approaches, lattices, the dimension of ordered sets, interval orders, lexicographic sums, products, enumeration, and the role of algebraic topology. This new edition shifts the primary focus to finite ordered sets, with results on infinite ordered sets presented toward the end of each chapter whenever possible. Also new are Chapter 6 on graphs and homomorphisms, which serves to separate the fixed clique property from the more fundamental fixed simplex property as well as to discuss the connections and differences between graph homomorphisms and order-preserving maps, and an appendix on discrete Morse functions and their use for the fixed point property for ordered sets.

Rich in examples, diagrams, and exercises, the second edition of *Ordered Sets* will be an excellent text for undergraduate and graduate students and a valuable resource for interested researchers. It will be especially useful to those looking for an introduction to the theory of ordered sets and its connections to such areas as algebraic topology, analysis, and computer science.

PRaise FOR THE FIRST EDITION

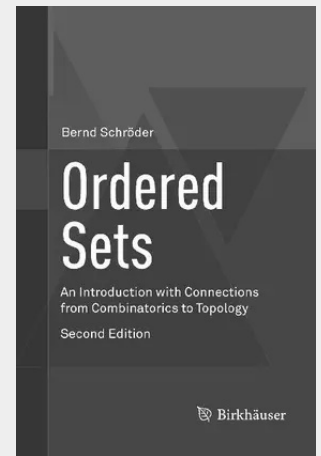
"The author has done the field a service by producing an excellent text strong in the presentation of certain topological aspects of the underlying diagrams, e.g., which should serve the developing community and field well and which can be recommended without reservations as one of the volumes which should grace a poseteer's library whether she is interested only or mainly in the theory of these objects or has directed her gaze towards applications. As a sourcebook of ideas and understanding it will make its mark. And deservedly so." — ZENTRALBLATT MATH

"...A gem. Undergraduate mathematics and computer science majors will find the first chapters offering background that will serve them well in many courses. The rest of the book, which features many open problems, constitutes an accessible and stimulating invitation to research . . . Highly recommended."

— CHOICE

"The author presents the field of ordered sets in an attractive way and the many open problems presented in the book are invaluable...[T]he book is a success, it presents an in depth and up to date carefully written coverage of ordered sets." —SIGACT NEWS<

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