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Lattice points. (In English)

Pitman Monographs and Surveys in Pure and Applied Mathematics, 39. Harlow: Longman Scientific & Technical; New York etc.: John Wiley & Sons. viii, 184 p. £30.00 (1989). [ISBN 0-582-01478-6; ISBN 0-470-21154-7]

This excellent book collects together many fascinating ramifications of the concept of lattice points.
Historically lattice point theory originated as a central subject in the geometry of numbers. Accordingly the authors give a quite detailed exposition of the classical and modern contributions of the geometry of numbers. Besides they touch on many other topics dealing with dissection problems; lattice polytopes; packing, covering, and tiling problems; quadratic forms; crystallography; visibility; connections with integral geometry; and applications to numerical integration, combinatorics, graph theory, and others.
This book is highly recommended to anyone interested or working in lattice point theory. It provides an exposition of the subject with only a few proofs but in general quite detailed (intuitive) explanations of the results. This way the book becomes (as the authors put it) an "appetizer" for further study. I am convinced that the book will considerably stimulate further research in the area of lattice points.

E.Schulte

Classification:
11Hxx Geometry of numbers
11-01 Textbooks (number theory)
52-01 Textbooks (convex and discrete geometry)
05-01 Textbooks (combinatorics)
52B99 Polytopes and polyhedra
11H06 Lattices and convex bodies (number theoretic results)
05B40 Packing and covering (combinatorics)
52C07 Lattices and convex bodies in n dimensions
11H55 Quadratic forms
05B45 Tessellation and tiling problems
52C17 Packing and covering in n dimensions (discrete geometry)
11H31 Lattice packing and covering (number-theoretic results)

Keywords:
lattice points; geometry of numbers; dissection problems; lattice polytopes; packing; covering; tiling problems; quadratic forms; crystallography; visibility; integral geometry; applications to numerical integration