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Descrizione fisica	1 online resource (XIX, 321 p. 55 illus., 4 illus. in color.)
Collana	Graduate Texts in Mathematics, , 0072-5285 ; ; 279
Disciplina	512.9
Soggetti	Commutative algebra Commutative rings Convex geometry Discrete geometry Combinatorics Commutative Rings and Algebras Convex and Discrete Geometry
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Nota di contenuto	Part I: Basic Concepts -- Polynomial Rings and Gröbner Bases -- Review of Commutative Algebra -- Part II:Binomial Ideals and Convex Polytopes -- Introduction to Binomial Ideals -- Convex Polytopes and Unimodular Triangulations -- Part III. Applications in Combinatorics and Statistics- Edge Polytopes and Edge Rings -- Join-Meet Ideals of Finite Lattices -- Binomial Edge Ideals and Related Ideals -- Ideals Generated by 2-Minors -- Statistics -- References -- Index.
Sommario/riassunto	This textbook provides an introduction to the combinatorial and statistical aspects of commutative algebra with an emphasis on binomial ideals. In addition to thorough coverage of the basic concepts and theory, it explores current trends, results, and applications of binomial ideals to other areas of mathematics. The book begins with a brief, self-contained overview of the modern theory of Gröbner bases and the necessary algebraic and homological concepts from commutative algebra. Binomials and binomial ideals are then considered in detail, along with a short introduction to convex polytopes. Chapters in the remainder of the text can be read

independently and explore specific aspects of the theory of binomial ideals, including edge rings and edge polytopes, join-meet ideals of finite lattices, binomial edge ideals, ideals generated by 2-minors, and binomial ideals arising from statistics. Each chapter concludes with a set of exercises and a list of related topics and results that will complement and offer a better understanding of the material presented. Binomial Ideals is suitable for graduate students in courses on commutative algebra, algebraic combinatorics, and statistics. Additionally, researchers interested in any of these areas but familiar with only the basic facts of commutative algebra will find it to be a valuable resource.