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Autore	Flajolet Philippe
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Nota di contenuto	Symbolic methods -- Combinatorial structures and ordinary generating functions -- Labelled structures and exponential generating functions -- Combinatorial parameters and multivariate generating functions -- Complex asymptotics -- Complex analysis, rational and meromorphic asymptotics -- Applications of rational and meromorphic asymptotics

-- Singularity analysis of generating functions -- Applications of singularity analysis -- Saddle-point asymptotics -- Random structures -- Multivariate asymptotics and limit laws -- Appendix A : Auxiliary elementary notions -- Appendix B : Basic complex analysis -- Appendix C : Concepts of probability theory.

Sommario/riassunto

Analytic combinatorics aims to enable precise quantitative predictions of the properties of large combinatorial structures. The theory has emerged over recent decades as essential both for the analysis of algorithms and for the study of scientific models in many disciplines, including probability theory, statistical physics, computational biology, and information theory. With a careful combination of symbolic enumeration methods and complex analysis, drawing heavily on generating functions, results of sweeping generality emerge that can be applied in particular to fundamental structures such as permutations, sequences, strings, walks, paths, trees, graphs and maps. This account is the definitive treatment of the topic. The authors give full coverage of the underlying mathematics and a thorough treatment of both classical and modern applications of the theory. The text is complemented with exercises, examples, appendices and notes to aid understanding. The book can be used for an advanced undergraduate or a graduate course, or for self-study.