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Nota di contenuto	Part I Coalescent Branching Processes: Coalescence in Branching Processes -- A Multi-type -coalescent -- Part II Branching Random Walks: On the Number of Positive Eigenvalues of the Evolutionary Operator of Branching Random Walk -- Branching Structures Within Random Walks and Their Applications -- Part III opulation Growth Models in Varying and Random Environments: Some Asymptotic Results for Strongly Critical Branching Processes With Immigration in Varying Environment -- Subcritical Branching Processes in Random Environment -- Part IV Size/Density/Resource-Dependent Branching Models: The Theorem of Envelopment and Directives of Control in Resource Dependent Branching Processes -- From Size to Age and Type Structure Dependent Branching – A First Step to Sexual Reproduction in General Population Processes -- Part V Age-dependent Branching Models: Supercritical Sevastyanov Branching Processes With Non-homogeneous Poisson Immigration -- Crump-Mode-Jagers

Branching Process – A Numerical Approach -- Part VI Special Branching Models: Bayesian Analysis for Controlled Branching Processes -- Recurrence and Transience of Near-critical Multivariate Growth Models – Criteria and Examples -- The Weighted Branching Process -- A Special Family of Galton-Watson Processes With Explosions -- Part VII Applications in Epidemiology: Total Progeny of Crump-Mode-Jagers Branching Processes – An Application to Vaccination in Epidemic Modeling -- Inference for Emerging Epidemics Among a Community of Households -- Part VIII Applications in Biology and Genetics: Extinction Probability of Some Recessive Alleles of X-linked Genes in the Context of two-sex Branching Processes -- Two-sex Branching Processes With Several Mating and Reproduction Strategies – Extinction Versus Survival -- On two–Type Decomposable Branching Processes in Continuous Time and Time to Escape Extinction.

Sommario/riassunto

This volume gathers papers originally presented at the 3rd Workshop on Branching Processes and their Applications (WBPA15), which was held from 7 to 10 April 2015 in Badajoz, Spain (http://branching.unex.es/wbpa15/index.htm). The papers address a broad range of theoretical and practical aspects of branching process theory. Further, they amply demonstrate that the theoretical research in this area remains vital and topical, as well as the relevance of branching concepts in the development of theoretical approaches to solving new problems in applied fields such as Epidemiology, Biology, Genetics, and, of course, Population Dynamics. The topics covered can broadly be classified into the following areas: 1. Coalescent Branching Processes 2. Branching Random Walks 3. Population Growth Models in Varying and Random Environments 4. Size/Density/Resource-Dependent Branching Models 5. Age-Dependent Branching Models 6. Special Branching Models 7. Applications in Epidemiology 8. Applications in Biology and Genetics Offering a valuable reference guide to contemporary branching process theory, the book also explores many open problems, paving the way for future research.