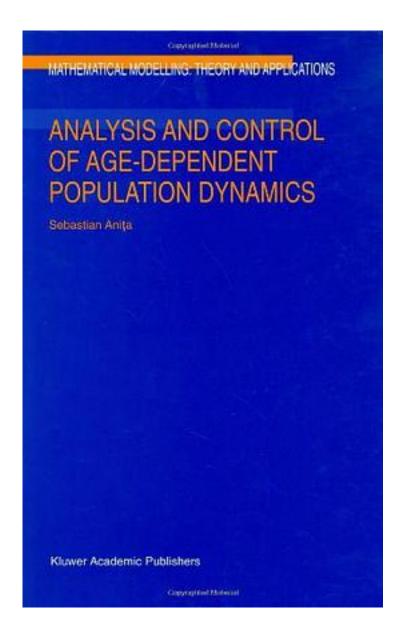
Analysis and Control of Age-dependent Population Dynamics



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出版者:Kluwer Academic Pub

出版时间:2000-10

装帧:HRD

This volume is devoted to some of the most biologically significant control problems governed by continuous age-dependent population dynamics. It investigates the existence, uniqueness, positivity, and asymptotic behaviour of the solutions of the continuous age-structured models. Some comparison results are also established. In the optimal control problems the emphasis is on first order necessary conditions of optimality. These conditions allow the determination of the optimal control or the approximation of the optimal control problem. The exact controllability for some models with diffusion and internal control is also studied. These subjects are treated using new concepts and techniques of modern optimal control theory, such as Clarke's generalized gradient, Ekeland's variational principle, Hamilton-Jacobi equations, and Carleman estimates. A background in advanced calculus and partial differential equations is required. Audience: This work will be of interest to students in mathematics, biology, and engineering, and researchers in applied mathematics, control theory, and biology.

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