

NEW BOOK ANNOUNCEMENT

COLLET, P., MARTÍNEZ, S. AND SAN MARTÍN, J. (2013).
Quasi-Stationary Distributions

is a new volume in the series

Probability and Its Applications

published by Springer in collaboration with the Applied Probability Trust.

Main concepts of quasi-stationary distributions (QSDs) for killed processes are the focus of the present volume. For diffusions, the killing is at the boundary and for dynamical systems there is a trap. The authors present the QSDs as the ones that allow describing the long-term behavior conditioned to not being killed. Studies in this research area started with Kolmogorov and Yaglom and in the last few decades have received a great deal of attention. The authors provide the exponential distribution property of the killing time for QSDs, present the more general result on their existence and study the process of trajectories that survive forever. For birth-and-death chains and diffusions, the existence of a single or a continuum of QSDs is described. They study the convergence to the extremal QSD and give the classification of the survival process. In this monograph, the authors discuss Gibbs QSDs for symbolic systems and absolutely continuous QSDs for repellers.

The findings described are relevant to researchers in the fields of Markov chains, diffusions, potential theory, dynamical systems, and in areas where extinction is a central concept. The theory is illustrated with numerous examples. The volume uniquely presents the distribution behavior of individuals who survive in a decaying population for a very long time. It also provides the background for applications in mathematical ecology, statistical physics, computer sciences, and economics.

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NEW BOOK ANNOUNCEMENT

MALYARENKO, A. (2013).

Invariant Random Fields on Spaces with a Group Action

is a new volume in the series

Probability and Its Applications

published by Springer in collaboration with the Applied Probability Trust.

The author describes the current state of the art in the theory of invariant random fields. This theory is based on several different areas of mathematics, including probability theory, differential geometry, harmonic analysis, and special functions. The present volume unifies many results scattered throughout the mathematical, physical, and engineering literature, as well as it introduces new results from this area first proved by the author. The book also presents many practical applications, in particular in such highly interesting areas as approximation theory, cosmology and earthquake engineering. It is intended for researchers and specialists working in the fields of stochastic processes, statistics, functional analysis, astronomy, and engineering.

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NEW BOOK ANNOUNCEMENT

COSTA, O. L. V., FRAGOSO, M. D. AND TODOROV, M. G. (2013).
Continuous-Time Markov Jump Linear Systems

is a new volume in the series

Probability and Its Applications

published by Springer in collaboration with the Applied Probability Trust.

It has been widely recognized nowadays the importance of introducing mathematical models that take into account possible sudden changes in the dynamical behavior of high-integrity systems or a safety-critical system. Such systems can be found in aircraft control, nuclear power stations, robotic manipulator systems, integrated communication networks and large-scale flexible structures for space stations, and are inherently vulnerable to abrupt changes in their structures caused by component or interconnection failures. In this regard, a particularly interesting class of models is the so-called Markov jump linear systems (MJLS), which have been used in numerous applications including robotics, economics and wireless communication. Combining probability and operator theory, the present volume provides a unified and rigorous treatment of recent results in control theory of continuous-time MJLS. This unique approach is of great interest to experts working in the field of linear systems with Markovian jump parameters or in stochastic control. The volume focuses on one of the few cases of stochastic control problems with an actual explicit solution and offers material well-suited to coursework, introducing students to an interesting and active research area.

The book is addressed to researchers working in control and signal processing engineering. Prerequisites include a solid background in classical linear control theory, basic familiarity with continuous-time Markov chains and probability theory, and some elementary knowledge of operator theory.

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Subscription rates

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Research papers are published in both *Journal of Applied Probability (JAP)* and *Advances in Applied Probability (AAP)*, with longer papers typically appearing in *AAP*. However, assignation of papers between the two journals is made by the Editor on an issue-by-issue basis. A submission to Applied Probability is considered as a submission to either journal. In addition, *AAP* publishes letters specifically related to papers that have appeared in *AAP* and *JAP* publishes short communications of a few printed pages in the nature of notes and letters specifically related to papers that have appeared in *JAP*. Review papers and papers in *stochastic geometry and statistical applications* are published in *AAP*.

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