

<<概率不等式>>

图书基本信息

书名：<<概率不等式>>

13位ISBN编号：9787030255624

10位ISBN编号：7030255623

出版时间：1970-1

出版时间：科学出版社

作者：Zhengyan Lin, Zhidong Bai

页数：181

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

<<概率不等式>>

前言

In almost every branch of quantitative sciences, inequalities play an important role in its development and are regarded to be even more important than equalities. This is indeed the case in probability and statistics. For example, the Chebyshev, Schwarz and Jensen inequalities are frequently used in probability theory, the Cramer-Rao inequality plays a fundamental role in mathematical statistics. Choosing or establishing an appropriate inequality is usually a key breakthrough in the solution of a problem, e.g. the Berry-Esseen inequality opens a way to evaluate the convergence rate of the normal approximation. Research beginners usually face two difficulties when they start researching—they choose an appropriate inequality and/or cite an exact reference. In literature, almost no authors give references for frequently used inequalities, such as the Jensen inequality, Schwarz inequality, Fa-tou Lemma, etc. Another annoyance for beginners is that an inequality may have many different names and reference sources. For example, the Schwarz inequality is also called the Cauchy, Cauchy-Schwarz or Minkovski-Bnyakovski inequality. Bennet, Hoeffding and Bernstein inequalities have a very close relationship and format, and in literature some authors cross-cite in their use of the inequalities. This may be due to one author using an inequality and subsequent authors just simply copying the inequality's format and its reference without checking the original reference. All this may distress beginners very much. The aim of this book is to help beginners with these problems. We provide a place to find the most frequently used inequalities, their proofs (if not too lengthy) and some references. Of course, for some of the more popularly known inequalities, such as Jensen and Schwarz, there is no necessity to give a reference and we will not do so.

<<概率不等式>>

内容概要

Inequality has become an essential tool in many areas of mathematical research, for example in probability and statistics where it is frequently used in the proofs. Probability Inequalities covers inequalities related with events, distribution functions, characteristic functions, moments and random variables (elements) and their sum. The book shall serve as a useful tool and reference for scientists in the areas of probability and statistics, and applied mathematics.

<<概率不等式>>

作者简介

Prof. Zhengyan Lin is a fellow of the Institute of Mathematical Statistics and currently a professor at Zhejiang University , Hangzhou , China. He is the prize winner of National Natural Science Award of China in 1997.

Prof. Zhidong Bai is a fellow of TWAS and the Institute of Mathematical Statistics; he is a professor at the National University of Singapore and Northeast Normal University , Changchun , China.

书籍目录

Chapter 1 Elementary Inequalities of Probabilities of Events 1.1 Inclusion-exclusion Formula 1.2 Corollaries of the Inclusion-exclusion Formula 1.3 Further Consequences of the Inclusion-exclusion Formula 1.4 Inequalities Related to Symmetric Difference 1.5 Inequalities Related to Independent Events 1.6 Lower Bound for Union (Chung-Erdős) References

Chapter 2 Inequalities Related to Commonly Used Distributions 2.1 Inequalities Related to the Normal d.f. 2.2 Slepian Type Inequalities 2.3 Anderson Type Inequalities 2.4 Khatri-Sidak Type Inequalities 2.5 Corner Probability of Normal Vector 2.6 Normal Approximations of Binomial and Poisson Distributions References

Chapter 3 Inequalities Related to Characteristic Functions 3.1 Inequalities Related Only with c.f. 3.2 Inequalities Related to c.f. and d.f. 3.3 Normality Approximations of c.f. of Independent Sums References

Chapter 4 Estimates of the Difference of Two Distribution Functions 4.1 Fourier Transformation 4.2 Stein-Chen Method 4.3 Stieltjes Transformation References

Chapter 5 Probability Inequalities of Random Variables 5.1 Inequalities Related to Two r.v.'s 5.2 Perturbation Inequality 5.3 Symmetrization Inequalities 5.4 Levy Inequality 5.5 Bickel Inequality 5.6 Upper Bounds of Tail Probabilities of Partial Sums 5.7 Lower Bounds of Tail Probabilities of Partial Sums 5.8 Tail Probabilities for Maximum Partial Sums 5.9 Tail Probabilities for Maximum Partial Sums (Continuation) 5.10 Reflection Inequality of Tail Probability (Hoffmann-Jorgensen) 5.11 Probability of Maximal Increment (Shao) 5.12 Mogulskii Minimal Inequality 5.13 Wilks Inequality References

Chapter 6 Bounds of Probabilities in Terms of Moments 6.1 Chebyshev-Markov Type Inequalities 6.2 Lower Bounds 6.3 Series of Tail Probabilities 6.4 Kolmogorov Type Inequalities 6.5 Generalization of Kolmogorov Inequality for a Submartingale 6.6 Renyi-Hajek Type Inequalities 6.7 Chernoff Inequality 6.8 Fuk and Nagaev Inequality 6.9 Burkholder Inequality 6.10 Complete Convergence of Partial Sums References

Chapter 7 Exponential Type Estimates of Probabilities 7.1 Equivalence of Exponential Estimates 7.2 Petrov Exponential Inequalities 7.3 Hoeffding Inequality 7.4 Bennett Inequality 7.5 Bernstein Inequality 7.6 Exponential Bounds for Sums of Bounded Variables 7.7 Kolmogorov Inequalities 7.8 Prokhorov Inequality 7.9 Exponential Inequalities by Censoring 7.10 Tail Probability of Weighted Sums References

Chapter 8 Moment Inequalities Related to One or Two Variables 8.1 Moments of Truncation 8.2 Exponential Moment of Bounded Variables 8.3 HSlider Type Inequalities 8.4 Jensen Type Inequalities 8.5 Dispersion Inequality of Censored Variables 8.6 Monotonicity of Moments of Sums 8.7 Symmetrization Moment Inequalities 8.8 Kimball Inequality 8.9 Exponential Moment of Normal Variable 8.10 Inequalities of Nonnegative Variable 8.11 Freedman Inequality 8.12 Exponential Moment of Upper Truncated Variables References

Chapter 9 Moment Estimates of (Maximum of) Sums of Random Variables 9.1 Elementary Inequalities 9.2 Minkowski Type Inequalities 9.3 The Case $1 \leq r \leq 2$ 9.4 The Case $r \geq 2$ 9.5 Jack-knifed Variance 9.6 Khintchine Inequality 9.7 Marcinkiewicz-Zygmund-Burkholder Type Inequalities 9.8 Skorokhod Inequalities 9.9 Moments of Weighted Sums 9.10 Doob Crossing Inequalities 9.11 Moments of Maximal Partial Sums 9.12 Doob Inequalities 9.13 Equivalence Conditions for Moments 9.14 Serfling Inequalities 9.15 Average Fill Rate References

Chapter 10 Inequalities Related to Mixing Sequences. 10.1 Covariance Estimates for Mixing Sequences 10.2 Tail Probability on p -mixing Sequence 10.3 Estimates of 4-th Moment on p -mixing Sequence 10.4 Estimates of Variances of Increments of p -mixing Sequence 10.5 Bounds of $2r$ -th Moments of Increments of p -mixing Sequence 10.6 Tail Probability on g -mixing Sequence 10.7 Bounds of $2r$ -th Moment of Increments of mixing Sequence 10.8 Exponential Estimates of Probability on mixing Sequence References

Chapter 11 Inequalities Related to Associative Variables 11.1 Covariance of PQD Variables 11.2 Probability of Quadrant on PA (NA) Sequence 11.3 Estimates of c.f.'s on LPQD (LNQD) Sequence 11.4 Maximal Partial Sums of PA Sequence 11.5 Variance of Increment of LPQD Sequence 11.6 Expectation of Convex Function of Sum of NA Sequence 11.7 Marcinkiewicz-Zygmund-Burkholder Inequality for NA Sequence References

Chapter 12 Inequalities about Stochastic Processes and Banach Space Valued Random Variables 12.1 Probability Estimates of Supremums of a Wiener Process 12.2 Probability Estimate of Supremum of a Poisson Process 12.3 Fernique Inequality 12.4 Borell Inequality 12.5 Tail Probability of Gaussian Process 12.6 Tail Probability of Randomly Signed Independent Processes 12.7 Tail Probability of Adaptive Process 12.8 Tail

<<概率不等式>>

Probability on Submartingale 12.9 Tail Probability of Independent Sum in B-Space 12.10 Isoperimetric Inequalities 12.11 Ehrhard Inequality 12.12 Tail Probability of Normal Variable in B-Space 12.13 Gaussian Measure on Symmetric Convex Sets 12.14 Equivalence of Moments of B-Gaussian Variables 12.15 Contraction Principle 12.16 Symmetrization Inequalities in B-Space 12.17 Decoupling Inequality References

<<概率不等式>>

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>