

<<概率不等式>>

图书基本信息

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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.

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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.

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