新　学　年　好

个人信息

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研究兴趣：概率极限理论

课程信息：

名称：概率论(H)

上课时间：每周五上午3、4、5节

上课地点：紫金港西1-206

平时成绩：15分

其中考试成绩：20

期末考试成绩：65

助教：沈钿

18757181895

goldbachst@foxmail.com

考试时间：待定

教材：概率论，第三版，林正炎等主编，浙江大学出版社

参考书

[1] 王梓坤，概率论基础及其应用，北京师范大学

[2] 李贤平，概率论基础，复旦大学

[3] 苏淳，概率论，中国科技大学

[4] K.L. Chung (Stanford), A course in Probability Theory,

[5] Pitman (Berkeley) Probability, Springer-Verlag, New York (1993)

[6] Shiryayev (Moscow State U.), Probability Theory,

概率论: 揭示随机现象规律的一门学科

- 什么是随机现象?
- 具体例子?
- 如何(运用数学工具)刻画随机现象规律?

主要内容

第一章：随机事件和概率

第二章：随机变量和分布函数

第三章：数字特征和特征函数

第四章：概率极限定理

• 仅作参考— UC at Berkeley (加州伯克莱分校)概率论课程安排:

http://stat-www.berkeley.edu/users/pitman/s134s09/

STATISTICS 134, SEC 3 SPRING 2009

Final Exam: TUESDAY, MAY 19, 2009 8AM-11AM. 210 Wheeler. You may bring two pages only of notes. Calculators OK.

Instructor: Jim Pitman

Title: Concepts of Probability

Format: 3 lectures per week

Prerequisite: One year of calculus

- Description: An introduction to probability, emphasizing concepts and applications. Conditional expectation, independence, laws of large numbers. Discrete and continuous random variables. Central limit theorem. Poisson process.
- Office hours: Tuesdays 9AM - 10AM, Student Learning Center (Cesar Chavez Atrium)
- GSI: Mu Cai Office hours: Monday 4-6:30PM, Wed 5-6PM and Fri 4-6:30PM in Evans 307.
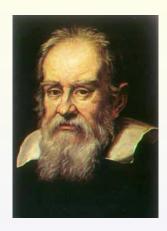
概率论学科的发展简史

一、萌芽时期

解决赌博、游戏中疑难问题是概率论学科发展的开始

• Before the theory of probability was formed Gambling was popular. Gamblers were crafty enough to figure simple laws of probability by witnessing the events at first hand. The opportunity was limitless in then exploiting the often complex and sometimes seemingly contradictory laws of probability.

Gerolamo Cardano

- Gerolamo Cardano (September 24, 1501 －September 21, 1576) was an Italian Renaissance mathematician, physician, astrologer and gambler
- Cardano was notoriously short of money and kept himself solvent by being an accomplished gambler and chess player. His book about games of chance, Liber de ludo aleae, written in the 1560s, but not published until 1663, contains the first systematic treatment of probability, as well as a section on effective cheating methods.
- http://en.wikipedia.org/wiki/Gerolamo_Cardano

Galileo Galilei

- Galileo Galilei (15 February 1564 – 8 January 1642) was an Italian physicist, mathematician, astronomer, and philosopher who played a major role in the Scientific Revolution.

- In the seventeenth century Galileo wrote down some ideas about dice games. This led to discussions and papers which formed the earlier parts of probability theory. There were and have been a variety of contributors to probability theory since then but it is still a fairly poorly understood area of mathematics.

- http://en.wikipedia.org/wiki/Galileo_Galilei

• "Mathematics of Games and Gambling"
—— Edward W. Packel

The new edition introduces and develops some of the
important and beautiful elementary mathematics needed
for rational analysis of various gambling and game
activities. Most of the standard casino games (roulette,
craps, blackjack, keno), some social games (backgammon,
poker, bridge) and various other activities (state lotteries,
horse racing) are treated in ways that bring out their
mathematical aspects.

The mathematics developed ranges from the predictable concepts of probability, expectation, and binomial coefficients to some less well-known ideas of elementary game theory.

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http://www.thegoodgamblingguide.co.uk/books/theory.htm

二、早期

许多科学家为概率论早期的发展做出了贡献

• Pierre de Fermat (17 August 1601 – 12 January 1665),
Blaise Pasca (June 19, 1623 – August 19, 1662)
Through his correspondence with Blaise Pascal in 1654,
Fermat and Pascal helped lay the fundamental groundwork
for the theory of probability. From this brief but productive
collaboration on the problem of points, they are now
regarded as joint founders of probability theory.

Pierre de Fermat

，

Blaise Pascal

• Jacob Bernoulli (also known as James or Jacques) (Basel, Switzerland 27 December 1654 – 16 August 1705) was one of the many prominent mathematicians in the Bernoulli family.

Jacob is best known for the work Ars Conjectandi (The Art of Conjecture), published eight years after his death in 1713. In this work, he described the known results in probability theory and in enumeration, often providing alternative proofs of known results. This work also includes the application of probability theory to games of chance and his introduction of the theorem known as the law of large numbers.

Jacob Bernoulli

• Abraham de Moivre (26 May 1667 in Vitry-le-Fran?ois, Champagne, France – 27 November 1754 in London, England; French pronunciation: [ab?am d? mwav?]) was a French mathematician famous for de Moivre's formula, which links complex numbers and trigonometry, and for his work on the normal distribution and probability theory. He was elected a Fellow of the Royal Society in 1697, and was a friend of Isaac Newton, Edmund Halley, and James Stirling. Among his fellow Huguenot exiles in England, he was a colleague of the editor and translator Pierre des Maizeaux.

Moivre.pdf

Abraham de Moivre

• De Moivre wrote a book on probability theory, entitled
The Doctrine of Chances. It was said that his book was
highly prized by gamblers.

It is reported in all seriousness that de Moivre correctly
predicted the day of his own death. Noting that he was
sleeping 15 minutes longer each day, De Moivre surmised
that he would die on the day he would sleep for 24 hours.
A simple mathematical calculation quickly yielded the date,
27 November 1754. He did indeed pass away on that day.

• Pierre-Simon, marquis de Laplace (23 March 1749 – 5 March 1827) was a French mathematician and astronomer whose work was pivotal to the development of mathematical astronomy and statistics. He summarized and extended the work of his predecessors in his five volume Mécanique Céleste (Celestial Mechanics) (1799 – 1825). This work translated the geometric study of classical mechanics to one based on calculus, opening up a broader range of problems. In statistics, the so-called Bayesian interpretation of probability was mainly developed by Laplace.

- In 1812, Laplace issued his

Theorie analytique des probabilités

三、中期

19世纪和20世纪初期，分析、代数、几何处于发展的黄金时期，但概率论相对停滞不前。

做出过一些贡献的有：Chebyshev，Markov, Lebegsue, Cantor, Poincare, Hilbert, Frechet, Wiener,......

- Pafnuty Lvovich Chebyshev (Russian, May 16, 1821 – December 8, 1894) was a Russian mathematician. Legacy: Chebyshev is considered a founding father of Russian mathematics. Among his well-known students were the prolific mathematicians Dmitry Grave, Aleksandr Korkin, Aleksandr Lyapunov and Andrey Markov. According to the Mathematics Genealogy Project, Chebyshev has about 5,000 mathematical "descendants". Chebyshev is known for his work in the field of probability, statistics and number theory.

- http://en.wikipedia.org/wiki/Pafnuty_Chebyshev

四、现代

随着现代数学的发展，概率论也逐渐成熟起来，现已成为数学中一个最为活跃的分支。

• Andrey Nikolaevich Kolmogorov (Russian, April 25, 1903 – October 20, 1987) was a Soviet Russian mathematician, preeminent in the 20th century who advanced various scientific fields (among them probability theory, topology, intuitionistic logic, turbulence, classical mechanics and computational complexity).

• http://en.wikipedia.org/wiki/Andrey_Kolmogorov

Kolmogorov

• In 1933, Kolmogorov published the book,
"Foundations of the Theory of Probability"
laying the modern axiomatic foundations of probability
theory and establishing his reputation as the world's
leading living expert in this field.

- Contents

Ch1. Elementary Theory of Probability

Ch2. Infinite Probability Fields

Ch3. Random Variables

Ch4. Mathematical Expectations

Ch5. Conditional Probability and Mathematical

Expectations

Ch6. Independence; The Law of Large Numbers

- http://www.mathematik.com/Kolmogorov/0004.html

• The book "Kolmogorov: Foundations of the Theory of Probability" by Andrey Nikolaevich Kolmogorov is historically very important. It is the foundation of modern probability theory. The monograph appeared as "Grundbegriffe der Wahrscheinlichkeitsrechnung" in 1933 and build up probability theory in a rigorous way similar as Euclid did with geometry. Today, it is mainly a historical document and can hardly be used as a textbook any more.