

國立中央大學數學系

四十週年校友系列演講(一)

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講題：Probabilistic Ideas in Mathematics

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(中央大學鴻經館 M306 室)

地點：中央大學鴻經館 M107 室

演講摘要

For mathematician, probability theory is often considered as a chapter of measure theory. This is in part true, since Kolmogorov in 1933 first laid the foundation for the probability theory based on the measure theory. The probability space is a mathematical framework to describe an experiment of random events. Kolmogorov Extension Theorem gives the existence of probability space for a random experiment which is based on the Caratheodary Extension Theorem in measure theory. Many ideas from measure theory are also used in the analysis in probability theory. However, there is an important concept in probability theory, the concept of independence, that can not be found in general measure theory. This is also the place where the development of probability theory diverges greatly from that of measure theory. The filtration, a family of σ -algebras, is also frequently introduced when we want to discuss random events which are not independent. The use of these new concepts can be best seen in the advanced study of stochastic processes. The modern probability theory finds a very wide range of applications, in practical problems and also in the studies of mathematics. In this talk, I hope to mention several examples that some ideas in probability theory give answers to some problems from other branch of mathematics. I will also mention several interesting mathematical problems motivated by the studies in probability theory.