國立中山大學應用數學系 學術演講

講　者：## Professor Ilie Grigorescu

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講　題：Continuous Limit for Shepp's Urn with Risk Aversion

時　間：2014/05/08（星期四）15：10～16：00

地　點：理學院四樓理 SC 4009-1 室

茶　會：16:00 於理 SC 4010 室（系辦公室）

摘要

An (m, p) urn contains m balls of value -1 and p balls of value $+1$. A player starts with fortune k and in each game draws a ball without replacement with the fortune increasing by one unit if the ball is positive and decreasing by one unit if the ball is negative, having to stop when $k=0$ (risk aversion). We are studying the question of the minimum k such that the net gain function of the game is positive, in both the discrete and the continuous (Brownian bridge) setting. For the cutoff value k, since the case $m-p<0$ is trivial, for $p \to \infty$, either $m-p \geq \alpha\sqrt{2p}$, when the gain function cannot be positive, or $m-p < \alpha\sqrt{2p}$, when it is sufficient to have $k \sim \sqrt{p\log p}$, where α is a constant. We also determine an approximate optimal strategy with exponentially small probability of failure in terms of p. The problem goes back to Larry Shepp (1969), who determined the constant α in the unrestricted case when the net gain does not depend on k. A new proof of his result is given in the continuous setting. This is based on joint work with Robert Chen (University of Miami) and Min Kang (North Carolina State University).

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