

# 國立中央大學

## 統計研究所

### 學術演講

主 講 人：洪英超教授（國立政治大學 統計學系）

講 題：Uniform Distribution and Quasi-Monte Carlo Simulations: Application and Computational Challenges

時 間：106 年 04 月 18 日（星期二）上午 11：00 ~ 12：00

地 點：中央大學鴻經館M429室

茶 會：上午 10：30 ~ 11：00      地 點：鴻經館 510 室

### ABSTRACT

The uniform distribution plays a key role in Monte Carlo simulations. It can be utilized to evaluate difficult integrals (such as moments, tail probabilities, etc), serve as a convenient candidate density in important sampling and prior in Bayesian analysis, perform the multivariate KS tests, etc. In this talk I will introduce how to simulate the uniform distribution over a general polyhedral domain (i.e. a region determined by linear constraints), which takes up a large portion in real applications. Apart from the probabilistic solution based on random sampling, I will also introduce a deterministic version of the solution called quasi-Monte Carlo method. The idea is based on the number theoretic construction of points having low “discrepancy” over the input domain, which is also recognized as “uniform design” in statistics and has fruitful applications in computer experiments, computer graphics, finance and biology. Finally, I will highlight some computational challenges arising in high-dimensional spaces.

◎敬請張貼

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