



DEPARTMENT OF APPLIED MATHEMATICS

應 用 數 學 系

**The Hong Kong Polytechnic University  
Department of Applied Mathematics**

**Colloquium**

**Convergence to the Mean Field Game Limit: A Case Study**

by

**Professor Marcel Nutz**

**Columbia University**

**Abstract**

Mean field games are generally interpreted as approximations to  $n$ -player games with large  $n$ . Indeed,  $n$ -player Nash equilibria are known to converge to their mean field counterpart when the latter is unique. In this talk we study a specific stochastic game where both the finite and infinite player versions naturally admit multiple equilibria. It turns out that mean field equilibria satisfying a transversality condition are indeed limits of  $n$ -player equilibria, but we also find a complementary class of equilibria that are not limits, thus questioning their interpretation as large  $n$  equilibria. (Joint work with Jaime San Martin and Xiaowei Tan)

**Date : 8 November, 2018 (Thursday)**

**Time : 4:00p.m. – 5:00p.m.**

**Venue : TU801, The Hong Kong Polytechnic University**

**\* \* \* ALL ARE WELCOME \* \* \***