



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

MATH/IEDA JOINT SEMINAR

On the most uncertain match

By

Prof. Gaoyue GUO

Laboratory in Mathematics and Computer Science
CentraleSupélec /France

Abstract

One of Aldous' open problems is to identify the max-entropy win-probability martingale. Namely, given two players of equal strength, such that the win-probability is a martingale diffusion, which of these processes has maximum entropy and hence gives the most uncertain match. We study a terminal-boundary value problem for the nonlinear parabolic PDE $2e_t(t,x) = \log(-e_{xx}(t,x))$ derived by Aldous and prove its well-posedness and regularity of its solution by combining PDE analysis and probabilistic tools. We establish key qualitative properties of the solution including concavity, monotonicity, convergence to a steady state for long remaining time and the asymptotic behaviour shortly before the terminal time. This talk is based on the joint-work with Howison, Possamai and Reisinger.

Date : 14 November 2023 (Tuesday)

Time : 10:30am - 11:30am

Venue : Room 4582 (Lifts 27/28)

All are Welcome!