

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

Seminar

**Multilevel Picard approximation for semilinear partial integro-differential equations
By**

**Dr. Sizhou WU
Nanyang Technological University**

Abstract

We study a multilevel Picard approximation algorithm for semilinear parabolic partial integro-differential equations (PIDEs). We prove that the numerical approximation scheme converges to the unique viscosity solution of the PIDE under consideration. To that end, we derive a Feynman-Kac representation for the unique viscosity solution of the semilinear PIDE, extending the classical Feynman-Kac representation for linear PIDEs. Furthermore, we show that the algorithm does not suffer from the curse of dimensionality, i.e. the computational complexity of the algorithm is bounded polynomially in the dimension and the reciprocal of the prescribed accuracy. This is joint work with A. Neufeld (Nanyang Technological University).



Date: 3 February 2023 (Friday)

Time: 12:00-13:00 (Hong Kong Standard Time GMT +8)

Venue: Online Talk via Zoom (Meeting ID: 944 0268 4353; Passcode: 0203)

Speaker: Dr. Sizhou Wu, Nanyang Technological University

Host: Dr. Junyi Zhang, The Hong Kong Polytechnic University

Click to join:

<https://polyu.zoom.us/j/94402684353?pwd=dzVaMFM2T3p3d2JkT0xzUWY3b0M5dz09>

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