

## **Modern numerical methods for semi-linear partial integro-differential equations using Monte Carlo and neural networks**

Sizhou Wu

In this talk, we introduce two modern numerical schemes to approximate semilinear parabolic partial integro-differential equations. The first scheme is the so-called multilevel Picard approximation based on Monte Carlo simulation, and the other one is the random /deep-splitting algorithm using random/deep neural networks. For both schemes, we provide full error analysis and complexity analysis.

This talk is based on joint works with Ariel Neufeld and Philipp Schmock