ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

INVITATION TO THE DOCTORAL SEMINAR

# Deep neural network discretization of the Wong-Zakai approximation of stochastic differential equations

**Kathrin Spendier** | Universität Klagenfurt

Chaired by Michaela Hitz | Department of Statistics

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## ABSTRACT

In recent years, deep neural networks (DNNs) have been successfully used in many computational problems including, for example, fraud detection or pattern recognition. DNN algorithms have been also proven to be enormously successful in overcoming the curse of dimensionality, in particular for solving Kolmogorov-type partial differential equations in hundreds of dimensions in reasonable computation time. Nothing is known until now on using neural networks in connection with the so-called Wong-Zakai method that approximates stochastic differential equations by suitable random ordinary differential equations. We are exploring whether neural networks are numerically beneficial in this context and provide an algorithm for that. This is joint work with Andreas Neuenkirch (University of Mannheim) and Michaela Szölgyenyi (University of Klagenfurt).

**We hope to see you there!**