

The long road to error guarantees in software for PDEs:
lessons from computational finance

Christina Christara
Department of Computer Science, University of Toronto

In this talk, we review several important issues that arise when solving PDEs in computational finance. Particular emphasis is placed on achieving stable convergence with no loss of order for parabolic PDEs with nonsmooth initial data. We also revisit the curse of dimensionality in the context of sparse grid methods. The overarching goal is to design numerical methods with predictable convergence behavior that remain computationally tractable for large-scale problems and ultimately support the development of software with rigorous error guarantees.