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# An Efficient Discretization to Simulate the Solution of a Linear-Quadratic Stochastic Boundary Control Problem

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## Résumé

In this talk, we present a fast and implementable discretization for the Dirichlet boundary control problem associated with the stochastic heat equation and demonstrate its space-time convergence with rates. After space-time discretization, the discrete optimality conditions involve the discretization of a backward SPDE, whose numerical solution is typically costly due to the computation of conditional expectations. We propose a reformulation of the discrete optimality conditions that eliminates the need for simulating conditional expectations, thereby significantly reducing computational complexity compared to regression-based simulations while maintaining the same convergence rate. Joint work with Fabian Merle, Andreas Prohl, and Yanqing Wang.

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