

Adaptive multilevel stochastic Galerkin FEM for parametric PDE problems

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Abstract

In this work, we propose an adaptive algorithm for computing multilevel stochastic Galerkin finite element approximations for a class of elliptic PDE problems with parametric or uncertain coefficients. We present the convergence and rate optimality analysis of the proposed adaptive algorithm and discuss the implementation of the multilevel stochastic Galerkin finite element method, including the associated linear algebra aspects.

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