

## Error estimation and adaptive algorithms for multilevel stochastic Galerkin FEM

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We consider a class of parametric elliptic PDEs, where the coefficients have affine dependence on infinitely many (uncertain) parameters. We introduce a two-level a posteriori estimator to control the energy error in multilevel stochastic Galerkin approximations. We show that the two-level estimator always provides a lower bound for the unknown approximation error, while the upper bound is equivalent to a saturation assumption. We propose and numerically compare adaptive algorithms, where the structure of the estimator is exploited to perform spatial refinement and parametric enrichment.