
Prashant Kumar
**Multilevel Monte Carlo convergence using high-order
finite volume methods for elliptic PDEs with random
coefficients**

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We present an approach to improve the convergence of a multilevel Monte Carlo method using a high-order discretization scheme for elliptic partial differential equations with random coefficients. We describe in detail a multilevel estimator which utilizes a fourth-order accurate solution of the elliptic PDEs. The superiority of this fourth-order estimator is reflected in terms of fewer multilevel Monte Carlo levels and samples compared to the existing method. Numerical experiments with small correlation length and high variance are reported.