

1096-65-776

**Jangwoon Lee\*** (11ee3@umw.edu), University of Mary Washington, Department of Mathematics, 1301 College Ave, Fredericksburg, VA 22401, and **Jeehyun Lee** and **Yoongu Hwang**. *An Optimization Based Domain Decomposition Method for PDEs with Random Inputs.*

An optimization-based domain decomposition method for stochastic elliptic partial differential equations is presented. The main idea of the method is a constrained optimization problem for which the minimization of an appropriate functional forces the solutions on the two subdomains to agree on the interface; the constraints are the stochastic partial differential equations. The existence of optimal solutions for the stochastic optimal control problem is shown as is the convergence to the exact solution of the given problem. We prove the existence of a Lagrange multiplier and derive an optimality system from which solutions of the domain decomposition problem may be determined. Finite element approximations to the solutions of the optimality system are defined and analyzed with respect to both spatial and random parameter spaces. Then, the results of some numerical experiments are given to confirm theoretical error estimate results. (Received September 10, 2013)