

A Stochastic Quasigradient Descent Algorithm for Shape Optimization

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Until recently, little was done to incorporate uncertainty into shape optimization models; however, models with uncertain input data would be more realistic and lead to more robust solutions. In this talk, we propose an algorithm for handling uncertainty in shape optimization. The algorithm involves stochastic quasigradient descent steps, which has the advantage of being easy to add to existing deterministic solvers and allows the user flexibility in the choice of probability distribution. The approach will be demonstrated for a model problem in linear elasticity using a phase field representation for shapes.