1086-VL-2104 **Yaning Liu*** (yliu2@math.fsu.edu), Department of Mathematics, 208 Love Building, 1017 Academic Way, Tallahassee, FL 32306, and **M. Yousuff Hussaini** and **Giray Okten**.

Optimization of a Monte Carlo Variance Reduction Method Based on Sensitivity Derivatives.

We propose an optimization technique for an efficient sampling method known as sensitivity derivative enhanced sampling (SDES). It has been shown in certain cases that SDES can bring no improvement over or even slow crude Monte Carlo sampling. Our proposed optimized version of SDES guarantees variance reduction and improved accuracy in estimates. The optimized SDES can also improve randomized quasi-Monte Carlo (RQMC) sampling, which converges with a higher rate compared to the Monte Carlo sampling. Numerical experiments are performed on three test cases including generalized steady-state Burgers equation and Korteweg-de Vries equation. The results show that the optimized SDES can improve crude Monte Carlo (or RQMC) and SDES by up to an order of magnitude. RQMC coupled with the optimized SDES provides the largest efficiency gains, which can be as high as 1800. (Received September 24, 2012)