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**J. B. Collins\*** (jcollins@wtamu.edu), West Texas A&M University, WT Box 60787, Canyon, TX 79016, and **Don Estep** and **Simon Tavener**. *A posteriori error estimation for a cut cell method with uncertain interface location.*

We study a simple diffusive process in which the diffusivity is discontinuous across an interface interior to the domain. In many situations, the location of the interface is measured at a small number of locations and these measurements contain error. Thus the location of the interface and the solution itself are subject to uncertainty. A Monte Carlo approach is employed which requires solving a large number of sample problems, each with a different interface location. An efficient adjoint-based a posteriori technique is used to estimate the error in a quantity of interest for each sample problem. This error has a component due to the numerical approximation of the diffusive process and a component arising from the uncertainty in the interface location. A recognition of these separate sources of error is necessary in order to construct effective adaptivity strategies. (Received August 18, 2015)