MATHEMATICAL SCIENCES DEPARTMENT

A Gradient-based Method for Analyzing Stochastic Variational Inequalities

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127 Memorial Hall

ABSTRACT

This talk presents a method of estimating statistics of interest for a Stochastic Variational Inequality developed jointly with Dr. Margaret Belknap (U.S. Military Academy) and Dr. Chun-Hung Chen (George Mason University). This method significantly reduces the heavy computational effort associated with generating a sample space of N solutions for N values of λ, the vector of random variables. Starting with a relatively small sample of solutions for values of λ, we use the gradient information at those solution points to determine whether we may estimate solutions or must solve for actual solutions for interim values of λ. We continue in an iterative manner to generate a sample space of size N that consists of estimated solutions for some values of λ and actual solutions for others. Using estimates in lieu of actual solutions represents significant computational savings. An application to the deregulation of the U.S. natural gas market is used to illustrate this proposed methodology.

Reception will be held in Room 209 of Trabant Student Center immediately following the talk