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Fernando Miranda-Mendoza* (fermirme@iastate.edu), Department of Mathematics, 396 Carver Hall, Iowa State University, Ames, IA 50011. *Numerical Solution of Stochastic Partial Differential Equations using Wiener-Ito Chaos Expansions.*

In many complex physical, economical, and biological phenomena, the large scale dynamics can be modeled by deterministic laws, while the small scale effects can be naturally modeled with stochastic processes. This combination usually results in partial differential equations with either random coefficients, random initial or boundary conditions, or random forcing terms.

I will describe the Wiener-Ito chaos expansion of a stochastic function defined on the white noise probability space and the applications of this series expansion to the numerical solution of stochastic PDEs. I will also make some observations about the importance of the concepts of white noise terms, Wick products, and stochastic distributions when modeling with stochastic PDEs. (Received February 15, 2010)