Meeting: 1006, Lubbock, Texas, SS 9A, Special Session on Theory and Application of Stochastic Differential Equations

1006-60-87 **Scott R. Franklin*** (Scott.Franklin@wbu.edu), 1900 W. 7th St. #503, Plainview, TX 79072, and **Philip W. Smith** and **Padmanabhan Seshaiyer**. *A three-field finite element method for elliptic partial differential equations driven by stochastic loads.*

This paper is concerned with the application of non-conforming finite element methods to stochastic partial differential equations. We present a mixed formulation of a three-field finite element method applied to an elliptic model problem involving stochastic loads. We then derive the exact form for the expected value and variance of the solution. Additionally the rate of convergence for the stochastic error is presented. Finally, we demonstrate through numerical experiments that the method is robust and reliable. (Received February 08, 2005)