

# Session Proposal

## Computations of stochastic systems

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The computations of probability density function (p.d.f.) or statistical moments of solutions of many stochastic systems are not always available in an analytical sense. One has to describe approximate methods to get approximate solutions for such uncertain systems. The high developments in computers, in general, and mainly in symbolic computations enlarge the usability of old and modern techniques which are computationally tedious, Pickard approximations for example.

The aim of this session is to present some of such methods and techniques adapted to stochastic systems, for example: stochastic finite element (SFEM), stochastic finite difference, Pickard approximation, variational iteration method (VIM) and its modification, Adomian decomposition method (ADM), homotopy perturbation method and WHEP technique, see some references [1-6].

Interested researchers in this session are invited to submit their manuscripts for the session organizer through E-mail. They will be E-mailed with the next steps after reviewing.

References:

- [1] Magdy A. El-Tawil , Ahmed A. Elbahasawi and Ahmed Abdelnaby, Solving Riccati Differential Equations using Adomian's Decomposition Method, J. Applied Mathematics and Computation, vol. 157/2, pp. 503-514, 2004.
- [2] M. El-Tawil , W. El-Tahhan and A. Hussein, A proposed technique of SFEM on solving ordinary random differential equation, J. Applied Mathematics and Computation, Vol. 161/1, pp 35-47, 2004.
- [3] O.H. Galal, El-Tawil M., El-Tahhan W. and Mahmoud A., Spectral SFEM analysis of structures with stochastic parameters under stochastic excitation, Structural Engineering and Mechanic (SEM), accepted (to appear in 2008).
- [4] Magdy A. El-Tawil, The Approximate Solutions of Some Stochastic Differential Equations Using Transformation, J. Applied Mathematics and Computation, Vol . 164/1 pp. 167-178, 2005.
- [5] M. El-Tawil , W. El-Tahhan A.A. Mahmoud and A. Hussein, Using FEM-RVT technique for solving a randomly excited ordinary differential equation with a random operator, J. applied mathematics and computation, 187, pp. 856-867, 2007.
- [6] Tamer A. Abassy, Magdy A. El-Tawil and Hanafy El-Zoheiry, Toward a Modified Variational Iteration Method, Computational and applied mathematics (JCAM) 207( 2007) 137-147.