

## ABSTRACT

### TRADITIONAL AND EMERGING TECHNIQUES FOR PRACTICAL RANDOM VIBRATION ANALYSES

by

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The lecture will focus on available tools for conducting random vibration analyses for practical engineering problems. An inherent aspect of this theme is the simultaneous existence of elements with linear behavior, and of elements of nonlinear behavior within the system. In this regard, techniques both for linear and nonlinear random vibration analyses will be discussed. Attention will be focused on traditional techniques such as statistical linearization/quadratization, and Monte Carlo simulation. Further, emerging techniques, such as wavelets as a tool for signal and response localization, and fractional calculus as a tool for capturing non-local behavior will be discussed. Pertinent examples of the application will be considered.

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