

Uncertainty and stochastic modeling

Session organizers

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Description

Computer simulations have become an essential tool for the design and analysis of complex mechanical systems. However, every numerical model that predicts the dynamic response of mechanical systems has uncertainties. Such uncertainties are associated with the lack of knowledge of the physical parameters involved with approximations inherent in the formulation, numerical approximation and unmodeled phenomena. The material properties, load conditions and boundary conditions are the usual sources of uncertainty in mechanical models. The simulation of such systems can be robust only if the uncertainties can be modeled and its impact quantified. Treating uncertainties is a critical element in the design of a robust system which has low sensitivity to the expected uncertainties. The purpose of this session is to bring together researchers and practitioners on issues related to uncertainty in design, simulation of mechanical systems using probabilistic and non-probabilistic methods.