
# Approaches for Uncertainty Quantification in Structural Dynamics

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Analysis of structural systems subject to dynamic loadings is extremely common in several disciplines such as aerospace, civil and mechanical engineering, among others. Usually, this type of analysis is carried out by means of highly detailed and numerically involved computational models. In order to ensure such models provide meaningful results, it is necessary to explicitly take into account the effects of the uncertainty on loadings and structural parameters that affect the performance. This may become a daunting task, as it adds an additional level of complexity over the (already challenging) structural dynamic deterministic analysis. Hence, there is an evident need for numerical methods that allow quantifying uncertainty in structural dynamics. Then, the aim of this special session is bringing together the latest developments on this field, with emphasis on approaches which exhibit a high numerical efficiency and that allow to model realistic systems of engineering interest.

The scope of this special session is wide, at it comprises: approaches for uncertainty quantification involving both probabilistic models and non-traditional models (such as intervals, fuzzy analysis and imprecise probabilities); analytical approaches and simulation methods; application of approximations and meta-models; forward problems (such as reliability analysis, sensitivity analysis, reliability-based optimization, robust risk analysis, etc.) and inverse problems (such as model identification and model updating); etc. Both theoretical developments and applications involving systems of engineering interest are particularly welcomed in this session.

This mini-symposium is organized under auspices of the Committee on Probability and Statistics in Physical Sciences (C(PS)2) of the Bernoulli Society for Mathematical Statistics and Probability.