

UNCERTAINTY MODELING AND QUANTIFICATION

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ABSTRACT

The rational treatment of uncertainties in structural mechanics receives, particularly in recent years, increasing attention. Loading conditions, material properties and geometry show, in some cases, considerable variations. Observations and measurements of physical processes as well as parameters clearly exhibit random characteristics. Hence, statistical and probabilistic procedures provide a sound framework for a rational basis for processing these uncertainties. In addition to parameter uncertainties, model uncertainties play also a focal role in modern structural mechanics. In reality, neither the true model nor the model parameters are deterministically known.

It is for these uncertainties that the assumption that an ever finer discretization leads consequently to an increase in accuracy is a myth.

In this context, the aspects of model validation and verification respectively are also addressed. In this mini symposium, conceptual and computational aspects of uncertainty processing and assessment will be discussed.