

Structural Reliability Analysis in presence of Random and Interval Uncertain Parameters

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In many engineering problems the uncertain parameters appear in terms of random and interval variables. The former are defined through probability distribution functions, the latter in terms of bounds. When dealing with the combination of both random and interval variables, the task of the structural reliability is the the evaluation of bounds of the failure probability.

In this paper we present an approach that handles random and interval variables within only one reliability assessment model. The proposed approach allows to evaluate the bounds of the failure probability using the same algorithms and methods of the structural reliability in presence of random variables only; moreover it is shown that adopting the properties of the design point, the computational cost can be reduced significantly.

Key Words: Structural Reliability Analysis, FORM, Design Point, Interval Variables, non-probabilistic methods