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Introduction to Various Innovative Techniques Suggested for Seismic Hazard Assessment

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Abstract : Amongst all the natural hazards, earthquakes have the potential for causing the greatest damages. Since the earthquake forces are random in nature and unpredictable, the quantification of the hazards becomes important in order to assess the hazards. The time and place of a future earthquake are both uncertain. Since earthquakes can neither be prevented nor be predicted, engineers have to design and construct in such a way, that the damage to life and property are minimized. Seismic hazard analysis plays an important role in earthquake design structures by providing a rational value of input parameter. In this paper, both mathematical, as well as computational methods adopted by researchers globally in the past five years, will be discussed. Some mathematical approaches involving the concepts of Poisson's ratio, Convex Set Theory, Empirical Green's Function, Bayesian probability estimation applied for seismic hazard and FOSM (first-order second-moment) algorithm methods will be discussed. Computational approaches and numerical model SSIFiBo developed in MATLAB to study dynamic soil-structure interaction problem is discussed in this paper. The GIS-based tool will also be discussed which is predominantly used in the assessment of seismic hazards.

Keywords : computational methods, MATLAB, seismic hazard, seismic measurements
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