

UNIVERSITY OF SOUTHERN CALIFORNIA
DEPARTMENT OF CIVIL ENGINEERING

**SELECTED TOPICS IN
PROBABILISTIC SEISMIC HAZARD ANALYSIS**

by

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FORWARD

Seismic hazard analysis for earthquake resistant design of structures is an interdisciplinary field involving knowledge from various fields of earth sciences and engineering. This report presents a summary of the state of the art methodology for probabilistic seismic hazard analysis for obtaining realistic input ground motions for design of structures. Examples are shown for India and California, drawn primarily from the experience of the authors. However, the presented methodology is general and is applicable to any region in the world. The method of stochastic analysis of structural response is also addressed.

The work on this report was motivated by a short course on “Seismic Risk Studies in India” convened by Dr. Vinay K. Gupta, Associate Professor of the Indian Institute of Technology, Kanpur, India. All the authors delivered lectures as part of this course, and the chapters of this report served as lecture notes.

The first chapter contains a general discussion on seismic hazard assessment. It is followed by six self-contained chapters, contributed by different authors, presenting in detail different topics of seismic hazard assessment. The report was edited by M.I. Todorovska and I.D. Gupta.

This report may be a useful reading to earthquake engineers and civil engineers in general who are not very familiar with probabilistic hazard analysis. The authors hope it will bring out the importance of probabilistic seismic hazard analysis in earthquake resistant design of structures.

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2. ATTENUATION AND EMPIRICAL SCALING OF EARTHQUAKE RESPONSE SPECTRA (Chapter III)
3. PROBABILISTIC SEISMIC HAZARD ANALYSIS (Chapter IV)
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