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Experimentation and Design Analysis

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Introduction

e objective of earthquake engineering research is to advance the state of knowledge by conducting fundamental and applied research to assist decision-makers in reducing seismic risks. All entities and organisations in uencing the planning and design/construction process, such as planning or regulod desigi8 (ce8g a)8(desig)-g s(9)12 5nI o0ndearthquake-resistant design are considered decisi

Earthquake engineering is a multi-phased method that includes describing earthquake origins, determining site e ects and structural response, and describing seismic safety measures. It includes occurrence modelling, geophysical modelling, ground-motion modelling, stochastic and nonlinear dynamic analysis, and architecture and experimentation.

Earthquake Engineering Centre has been focusing on seismic hazard and risk analysis for over 30 years. Modelling origins, incidence, and attenuation, as well as designing probabilistic hazard analysis methodologies using Poisson and Bayesian models, were the key focus of early work. In recent years, a lot of work has gone into applying mechanistic models to the incidence and attenuation phenomenon. To re ect the fault rupture dynamics and the stress accumulation and release cycles of major earthquakes, time- and spacedependent models have been introduced. Advanced analytical tools including geographic information systems (GIS) and database management systems (DBMS) have recently been used to collect, interpret, incorporate, and view tectonic, seismological, geological, and engineering information needed in seismic hazard assessment.

Ground motion modelling

e use of simulation of ground motion models for seismic hazard analysis, stochastic-physical rupture process models for ground motion prediction, prediction of ground motion for engineering applications, and study of the nonstationary characteristics of simulated and observed ground motions for nonlinear analysis are all areas of research in earthquake engineering. For simulating strong ground motion, various geophysical models are being considered, and historical motions from recent earthquakes are being analysed for their characteristics and damage potential. Recent seismological research has focused on the understanding and characterization of heavy near- eld ground motion. For simulating strong ground motion, various geophysical models are being considered, and historical motions from recent earthquakes are being analysed for their characteristics

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