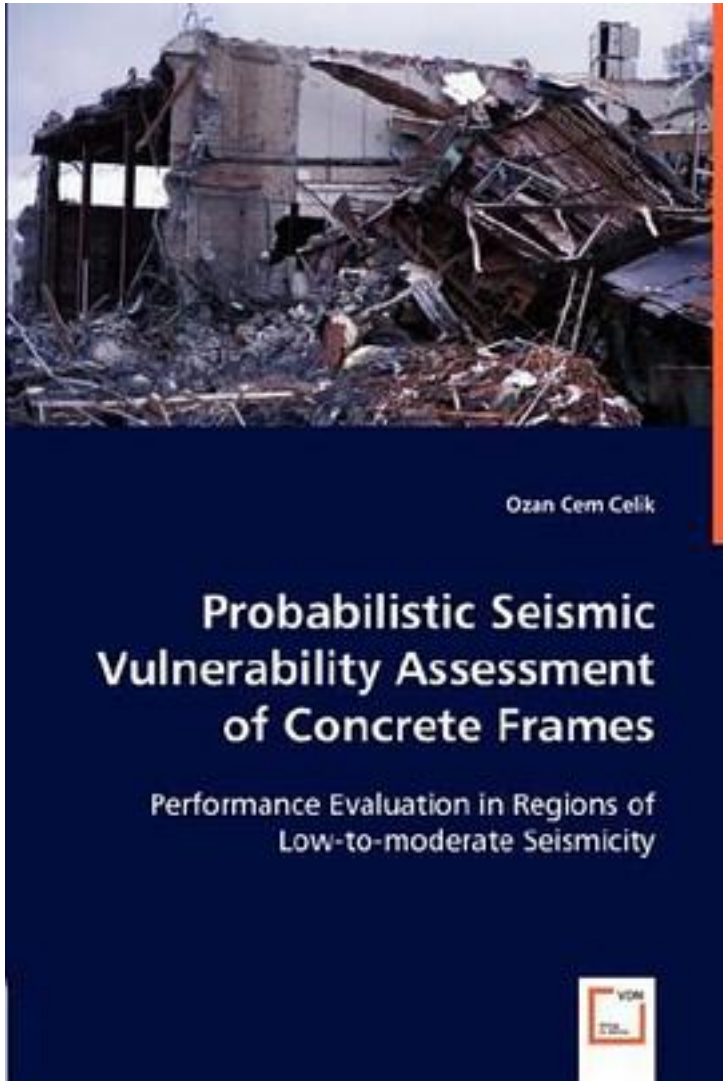


Probabilistic Seismic Vulnerability Assessment of Concrete Frames



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This book presents a set of probability-based tools for efficient uncertainty analysis and for seismic vulnerability and risk assessment of structures, and illustrates the use of these tools in evaluating the potential impact of future earthquakes that may occur in the New Madrid Seismic Zone on reinforced concrete frames in the Central and Eastern United States. Due to the lack of natural strong motion records in this low-to-moderate seismic region, synthetic earthquake ground motions developed in recent seismological research are used in nonlinear finite element-based time history analyses to determine the seismic demand on the gravity load designed (GLD) frames. Seismic fragilities that incorporate various sources of uncertainty are formulated for low-, mid-, and high-rise GLD frames, and are used in the performance appraisal of the building frame inventory in Memphis, TN. This fragility assessment indicates that traditional GLD reinforced concrete frames may not meet the life safety and collapse prevention performance objectives that are stipulated in recent building codes and guidelines for performance-based earthquake engineering. The intended audience of this book is researchers and professional engineers involved with the performance assessment of existing buildings for upgraded seismic resistance.

作者介绍:

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