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COMPUTATIONAL METHODS IN SEISMIC ENGINEERING

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ABSTRACT

Earthquake engineering has an objective to design and build structures with predictable and measurable behavior to achieve an acceptable level of safety in each performance level considered. The computational numerical methods are useful tools for the analysis of different resistant structural systems that allow predictions about the response to seismic actions.

The development of constitutive models has a large impact on the quality and accuracy of the resulting structural response, especially those related to non-linear behavior, the energy dissipation devices, and simulation of local failure or global system collapse. Another aspect of interest is the characterization of the seismic action for the site under study, considering local characteristics and distance to the possible active faults. Design spectra, recorded and scaled accelerograms, artificially generated accelerograms, or power spectral density functions are used.

Important uncertainties are present in the variables regarding both the seismic action and the capacity of the system. Then, the probabilistic analysis is considered a useful tool for analyzing the safety of earthquake-resistant systems. In recent years optimization methods have begun to be applying, in both deterministic and probabilistic field, to minimize the life cycle cost of the building.

This mini-symposium aims to bring together researchers and users with interests in the development and implementation of the above issues, in order to present results and exchange ideas on recent advances in this area of engineering. Be of particular interest the works that, in addition to computational aspects, present experimental results that serve as motivation and / or validation of the models.