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COMPUTATIONAL METHODS FOR SEISMIC ANALYSIS AND DESIGN

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ABSTRACT

Despite the intensive research conducted in the area of seismic analysis and design during the last three decades, there is still a need for the development of methodologies, which incorporate the latest research findings and provisions of codes and are applicable to practical problems. The increasing necessity to solve such complex problems in Earthquake Engineering requires the implementation of innovative computational procedures for providing accurate numerical solutions in affordable computing times.

This Minisymposium on "Computational methods for seismic analysis and design", which is organized in the framework of the WCCM VIII and ECCOMAS 2008 Conferences, aims at presenting recent advances in computer methodologies for structural and geotechnical applications in earthquake engineering. In this respect, the Minisymposium topics include simulation issues for the seismic response of structures, efficient numerical treatment of the resulting discretized problem for accelerating seismic analysis computations (solution methods, preconditioning techniques, parallel processing schemes, etc.), design optimization procedures, performance based design, soft computing applications (employing neural networks, fuzzy logic, evolutionary algorithms etc.), uncertainties treatment in earthquake engineering (probabilistic/stochastic approaches for uncertain properties and seismic loads) and any other numerical approach for seismic analysis and design.

In particular the topics for this minisymposium include but are not limited to:

- Numerical simulation methods, Nonlinear dynamics
- Solution strategies for dynamic equations
- Soft computing applications,
- Optimum design in structural dynamics and earthquake engineering
- Geotechnical Earthquake Engineering, Soil-structure interaction
- Stochastic dynamics, Risk and reliability analysis,
- Constitutive modeling under earthquake loading,
- Seismic isolation, Repair and retrofit of structures,
- Algorithms for structural health monitoring.