Session ID: SDM-10

Title
SEISMIC NONLINEAR MODELLING OF BUILDINGS IN THE ENGINEERING PRACTICE: DESIGN AND ASSESSMENT

Convenors
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Description
The capability of software packages in performing seismic nonlinear analyses exponentially increased in last decade and their use is spreading not only at research level but also in the professional community. However, several problematic issues in the actual accuracy of achievable results have been highlighted by many blind predictions and benchmarking experiences (e.g. the ReLUIS URM-nonlinear modeling Benchmark project https://link.springer.com/journal/10518/volumes-and-issues/20-4).

Within this context, the technical session would promote a discussion of what is the actual use of nonlinear analysis in real practice, what is actually feasible and what are the open problems and future directions. These issues will be faced referring on both reinforced concrete and masonry structures constituting a useful occasion to possibly outline a common framework of the actual needs to improve in the future the knowledge transfer from research to engineering practice.

Invited speakers will address the following issues:
-To what extent are available nonlinear models applicable in the engineering practice?
- How sensitive are results to modeling assumptions, assumed input parameters, numerical instability and/or to convergence parameters?
- Which are the main problematic issues in the interpretation of results?
- Static versus dynamic nonlinear analysis: what are pros and cons in practical applications?

Finally, the session welcomes contributions dealing with the application of nonlinear analyses to:
- Actual case studies of real-world seismic assessment and retrofitting projects
- Design of new buildings, e.g. that employ innovative structural systems or materials/devices that do not conform to current building code requirements
- Benchmarks addressed to the comparison of nonlinear analysis with experimental testing
- Benchmarks addressed to the comparison of results of nonlinear vs. linear procedures.

Invited Speakers
S. Lagomarsino [1], K. Beyer [4], L.N. Lowes [5], J. Pacheco de Almeida [6]

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