

# Large-scale testing of earthquake-resistant structures: Accomplishments and future challenges

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*Earthquake Engineering and Structural Dynamics* (EESD) dedicates selected issues of the *Journal*, normally no more than one issue a year, to a special topic. The Special Issue publication is attractive to authors as well as readers. To researchers and practicing professionals it provides a forum to present their work in a publication of related papers on one subject. To readers it provides a comprehensive view of a timely subject in one venue.

Each Special Issue normally consists of (a) original papers (submitted in response to a Call for Papers), (b) invited State-of-the-Art or review paper, (c) opinions, and (d) technical notes, as deemed appropriate for the topic. The Editorial Board encourages the submission of manuscripts that address the following areas: basic research papers that advance and/or address open issues about fundamental knowledge of the subject; applied research papers that extend and re-interpret existing results, and then present these results in a form suitable for use in engineering practice; and papers that report on applications of research to solve practical problems. A Guest Editor, appointed for each Special Issue, reviews the contributed papers, with the advice and assistance of other reviewers. On these premises, we are pleased to announce a Special Issue dedicated to large-scale testing of earthquake-resistant structures, with Professor Dimitrios Lignos as the Guest Editor.

Experimental research over the past four decades has advanced the state of knowledge on the seismic response, evaluation, and design of structures. Advanced experimental techniques feature dynamic and quasi-static testing to further comprehend system-level effects including the soil-structure interaction. Moreover, state-of-the-art instrumentation systems have contributed into the robust identification of dynamic and mechanical properties of structures based on both in-situ tests and controlled-laboratory experiments. Concerted efforts have also contributed into the successful data storage and curation to enable data reuse and reproducibility of scientific findings. The objective of this Special Issue is to serve as a platform to discuss the primary scientific and practical accomplishments from large-scale testing with emphasis on actual system- and/or sub-system level seismic behavior. The Special Issue will act as a forum and will highlight future challenges of experimental earthquake engineering. Examples of topics include but are not limited to the following three sub-themes:

## Advanced Experimental Techniques for Large-Scale Testing

- Advanced shaking table tests
- Advanced hybrid simulation
- Advanced in-situ tests
- Experimental methods to assess higher mode effects on structural response
- Novel testing methods suitable for large-scale testing
- Reproduction of collapse and near-collapse obtained by large-scale testing
- Loading and instrumentation techniques effective for large-scale testing
- Archiving and sharing of data obtained by large-scale testing

## Effective use of Data obtained by Large-Scale Testing

- Scale and rate-of-loading effects
- Duration effects on structural response
- Influences of damping
- Alternative load paths and force redistribution
- Interactive failure modes

- Structural health monitoring techniques

### **Contribution of Large-Scale Tests in Advancement of Earthquake Engineering**

- Characterization of dynamic soil-structure interaction
- Validation of advanced technologies to enhance seismic capacity of structures (e.g., low-damaged systems)
- Validation of novel retrofit techniques applied to seismically deficient structures
- Advancement of seismic design standards

Contributed papers for this Special Issue should be submitted to Wiley using the online system <https://wiley.atyponrex.com/dashboard?siteName=EQE>). Prior to submitting your article, please read the Author Guidelines. The deadline for submission of manuscripts is **April 30, 2024**.