

# **Call for Papers**

## **Special Issue in Computational Methods for Stochastic Engineering Dynamics**

Ever-increasing computational capabilities, novel signal processing techniques, advanced experimental setups, and progress in emerging and transformative technologies (e.g., nano-mechanics, energy harvesting, etc.) have contributed to a highly complex mathematical modeling of the governing equations of diverse dynamical systems. In fact, irrespective of the scale of the problem, persistent challenges in the field of stochastic engineering dynamics exist. Indicatively, these pertain to high dimensionality, complex nonlinear / hysteretic behaviors, as well as to non-white and non-Gaussian stochastic excitation modeling. In this regard, the state-of-the-art solution techniques for determining system response and reliability statistics can be broadly divided into two categories. First, those that exhibit a high degree of accuracy, but the associated computational cost becomes prohibitive with increasing number of stochastic dimensions / degrees-of-freedom. Second, those that can readily treat high-dimensional systems, but provide reliable estimates for low-order response statistics only. Clearly, the development of versatile solution techniques that exhibit both high accuracy and low computational cost is critical for addressing these challenges, and for advancing the field of stochastic engineering dynamics further.

The guest editors are calling for paper submissions to this special issue to be published in the international journal of Engineering Structures. The proposed special issue will comprise, primarily, invited contributions on the topic of “Computational Methods for Stochastic Engineering Dynamics” drawing on the community of the European Association of Structural Dynamics. The objective of the proposed special issue will be to present recent advances, and to discuss current and emerging multi-disciplinary approaches in the field of computational stochastic dynamics.

Specific contributions related both to fundamental research and to engineering applications of stochastic dynamics, as well as data-driven and signal processing methodologies in the modeling process are welcome. A non-exhaustive list includes

- Nonlinear stochastic dynamics;
- Joint time-frequency analysis tools;
- Sparse representations;

- Compressive sampling and data driven approaches;
- Uncertainty quantification methods;
- Structural systems and signal processing;
- Stochastic / fractional calculus modeling and applications;
- Stochastic model / dimension reduction techniques;
- Monte Carlo simulation methods;
- Structural safety and stochastic structural design;
- Performance-based engineering methodologies;
- Risk / reliability assessment applications;

A concerted effort will be made to achieve broad geographic representation, while the targeted invited papers will be characterized by opulent thematic and methodological diversity. Original research papers as well as review articles are welcome / invited. Notably, submission to this special issue is open to all in addition to the selected guest editors invited authors. Lastly, all submissions will go through the same rigorous peer review process as the one that is normally undertaken for a normal issue.

#### **Guest editors:**



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### **Manuscript submission information:**

When submitting your manuscript please choose the special issue “**VSI: Stochastic Dynamics**” from the choice of submission types. The manuscript should comply with the limit of no more than 30 pages for a research paper and 40 pages for a review paper (Standard page, double line spacing, font size 12) including all sections except references. Please visit the journal website for additional notes for the authors.

**The submission is open from May 1, 2023.**

**The deadline for submission of manuscripts is February 15, 2024.**

Engineering Structures is publishing special issues in the new format where special issue articles are published in regular issues as soon as they are available, and simultaneously being grouped online under a specific special issue link, which is easily accessible and navigable on ScienceDirect. Please note that papers solicited through this call will undergo standard journal peer review process and will be indexed for citations like other regular journal papers. All interested authors can submit papers to the special issue through the online journal submission system at EM system:

<https://www.editorialmanager.com/engstruct>

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Interested in becoming a guest editor? Please inquire the Special Issues Editor of Engineering Structures (Prof. Peng Feng, Email: [fengpeng@tsinghua.edu.cn](mailto:fengpeng@tsinghua.edu.cn) ) and discover the benefits of guest editing a special issue and the valuable contribution that you can make to your field:

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