Special Issue

Advances in Symmetry and Asymmetry in Fracture Mechanics

Message from the Guest Editors

FEM has become a cornerstone in the analysis and simulation of complex systems in mechanical engineering, materials science, and structural mechanics. This Special Issue aims to explore the profound role of symmetry in enhancing the accuracy, efficiency, and interpretability of FEM-based approaches. Symmetry considerations—whether geometric, material, or boundary-condition related—enable significant reductions in computational effort and provide deeper insight into the fundamental behavior of mechanical systems. Topics of interest include the application of symmetry in nonlinear and multiscale modeling, fracture mechanics, dynamic simulations, and emerging computational techniques such as phase-field and isogeometric analysis. Contributions that address methodological advances, algorithm development, or symmetry-based simplifications in modeling and simulation are particularly welcome. This Issue encourages submissions ranging from theoretical developments and numerical implementations to experimental validations and case studies demonstrating the practical advantages of incorporating symmetry principles in finite element analyses.

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About the Journal

Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

Editor-in-Chief

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