Special Issue

Symmetry in Finite Element Modeling and Its Applications in Underground Space

Message from the Guest Editors

Symmetry plays a crucial role in finite element modeling, offering computational efficiency, solution accuracy, and deeper insights into structural behavior. In underground space engineering, leveraging symmetry principles enables optimized numerical simulations, reduced computational costs, and enhanced structural designs. This Special Issue aims to present the latest research on symmetry and asymmetry in finite element modeling and their applications in underground space. We invite contributions covering theoretical developments, experimental validations, and numerical investigations on relevant topics, including but not limited to symmetry-based finite element formulations, the detection and utilization of symmetry/asymmetry in underground structures, novel applications of symmetry in geotechnical modeling, the optimization of computational strategies through symmetry, symmetry breaking in complex underground environments, and the impact of symmetry considerations on numerical accuracy and stability. We seek to highlight the significance of symmetry in advancing finite element modeling techniques and promoting state-of-the-art developments in underground space engineering.

Guest Editors

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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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