Special Issue

Symmetry/Asymmetry in Rock Mechanics and Geotechnical Engineering

Message from the Guest Editors

- Rock mechanics and geotechnical engineering involve materials with inherent heterogeneity, anisotropy, and discontinuities. Symmetry and asymmetry are therefore central to understanding rock mass behavior. While classical models assume isotropy or symmetric stress states, actual geological conditions often show strong asymmetry, such as asymmetric joint roughness affecting shear behavior and uneven stress redistribution in mining and underground works leading to instability. Asymmetrical structures also strongly influence slope failure initiation and movement, making the study of such mechanisms essential for effective monitoring and mitigation.
- This Special Issue examines the roles of symmetry and asymmetry in rock mechanics and geotechnical engineering. We welcome theoretical, experimental, and numerical studies on topics such as rock joints, rock mass heterogeneity, geological uncertainty, coupled processes, underground engineering, and the stability, monitoring, and mitigation of rock slopes and landslides. The goal is to connect idealized symmetrical models with real asymmetric geological conditions to improve understanding and engineering practice.

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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