

Special Issue

Symmetry and Asymmetry in Optimization Algorithms and Control Systems

Message from the Guest Editors

This Special Issue, titled “Symmetry and Asymmetry in Optimization Algorithms and Control Systems”, examines the profound role that symmetric and asymmetric structures play in the development and performance of optimization algorithms and control systems. Symmetry often simplifies mathematical models, leading to more efficient algorithms with reduced computational costs. However, asymmetry is equally important in addressing the complexities of real-world systems, particularly those that are nonlinear, dynamic, or uncertain. This Special Issue explores the delicate balance between utilizing symmetry for computational efficiency and incorporating asymmetry to enhance system robustness and adaptability. The topics covered in this Special Issue include the following: symmetry-based optimization techniques, the impact of asymmetry on system dynamics, and the design of novel algorithms that effectively handle both symmetric and asymmetric challenges. The goal of this Special Issue is to advance our understanding of how these concepts influence the stability, scalability, and performance of both optimization methods and control strategies...

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.

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