Special Issue

Symmetry and Emerging Technologies in Sustainable Systems

Message from the Guest Editors

In recent years, advances in artificial intelligence, computational modeling, materials science, and complex system design have highlighted new dimensions of symmetry, not only as an aesthetic property but also as a tool for optimization, efficiency, and innovation. This Special Issue of *Symmetry* brings together cutting-edge research and reviews that explore theoretical developments, practical applications, and interdisciplinary insights into symmetry and its breaking. The contributions cover a wide spectrum of topics, including but not limited to the following: Mathematical symmetry and group theory applications in modern problem-solving; Computational intelligence and symmetry-based algorithms in image analysis, pattern recognition, and machine learning; Physical and material sciences, where nanoscale and quantum-level symmetries drive innovation in energy systems and nanotechnology; Biological and ecological systems, exploring symmetry in natural structures and behaviors; Engineering applications, such as sustainable energy, smart agriculture, and resilient infrastructure, where symmetry principles underpin system design and optimization.

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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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