Special Issue

New Applications of Symmetry in Lattice Field Theory

Message from the Guest Editors

Symmetry is at the heart of lattice field theory. While a robust and rigorous means of formulating the gauge symmetries underlying particle physics, it breaks another cherished symmetry, Poincaré invariance. One of the great challenges of lattice field theory has been to identify faithful implementations of the chiral symmetry protecting fermions from acquiring mass. Symmetry considerations also determine important strong-interaction issues such as confinement. This special issue highlights applications in several fast-developing directions: the nature of confinement and role of topological excitations; quantum critical points in lower-dimensional fermionic theories relevant to condensed-matter systems; symmetry-protected topological phases yielding edge states; robust quantum computation; dynamical mass generation without symmetry breaking; exact implementations of supersymmetry; chiral gauge theories for the Standard Model/Extended Technicolor; tensor networks for interacting quantum systems; and studies of quantum gravity using dynamical triangulation of spacetime.

Guest Editors

Prof. Simon Hands
Department of Mathematical Sciences, University of Liverpool, Liverpool L69 3BX, UK

Prof. Simon Catterall
Department of Physics, Syracuse University, Syracuse, NY 13244, USA

Deadline for manuscript submissions

closed (28 February 2023)

Symmetry

an Open Access Journal by MDPI

Impact Factor 2.2
CiteScore 5.3

mdpi.com/si/87002

Symmetry
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
symmetry@mdpi.com

mdpi.com/journal/symmetry

Symmetry

an Open Access Journal by MDPI

Impact Factor 2.2
CiteScore 5.3

mdpi.com/journal/symmetry

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

Prof. Dr. Sergei Odintsov
1. ICREA, 08010 Barcelona, Spain
2. Institute of Space Sciences (IEEC-CSIC), C. Can Magrans s/n, 08193 Barcelona, Spain

Author Benefits

Open Access:

free for readers, with article processing charges (APC) paid by authors or their institutions.

High Visibility:

indexed within SCIE (Web of Science), Scopus, CAPlus / SciFinder, Inspec, Astrophysics Data System, and other databases.

Journal Rank:

JCR - Q2 (Multidisciplinary Sciences) / CiteScore - Q1 (General Mathematics)

MDPI