



symmetry



an Open Access Journal by MDPI

Symmetry/Asymmetry in Quantum Computing and Quantum Machine Learning Algorithms for High Energy Physics

Guest Editors:

Prof. Dr. Kamal Benslama

Department of Physics, Loyola
University Maryland, 4501 N.
Charles Street, Baltimore, MD
21210-2699, USA

Dr. Samuel Yen-Chi Chen

Computational Science Initiative,
Brookhaven National Laboratory,
New York, NY 11973-5000, USA

Deadline for manuscript
submissions:

closed (10 June 2023)

Message from the Guest Editors

Quantum computing was postulated in the early 1980s as a way to perform computations that would not be tractable with a classical computer. With the advent of noisy intermediate-scale quantum computing devices, more quantum algorithms are being developed with the aim of exploiting the capacity of the hardware for machine learning applications. An interesting question is whether we will be able to develop quantum algorithms that will be able to outperform those classical machine learning algorithms used by the HEP community for decades.

The High Energy Physics community used classical machine learning algorithms to address a wide variety of challenging problems, including searches for the Higgs boson and physics beyond the standard model. This Special Issue aims to gather the latest developments in quantum machine learning algorithms to address challenging problems in particle physics, such as particle classification, track and vertex reconstruction, and physics simulation, beyond the standard model searches and quantum entanglement.



mdpi.com/si/100046

Special Issue



an Open Access Journal by MDPI

Editor-in-Chief

Prof. Dr. Sergei D. Odintsov

1. Institució Catalana de Recerca
i Estudis Avançats (ICREA),
Passeig Luis Companys, 23,
08010 Barcelona, Spain
2. Institute of Space Sciences
(ICE-CSIC), C. Can Magrans s/n,
08193 Barcelona, Spain

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.

Author Benefits

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

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

Journal Rank: JCR - Q2 (*Multidisciplinary Sciences*) / CiteScore - Q1 (*General Mathematics*); Q1 (*Physics and Astronomy*); Q1 (*Computer Science*)

Contact Us

Symmetry Editorial Office
MDPI, St. Alban-Anlage 66
4052 Basel, Switzerland

Tel: +41 61 683 77 34
www.mdpi.com

mdpi.com/journal/symmetry
symmetry@mdpi.com
X@Symmetry_MDPI