

Special Issue

Quantum Entanglement and Quantum Information in High Energy Physics

Message from the Guest Editor

The aim of this Special Issue is to explore the core aspects of quantum information (QI), delving into the captivating realm of QI at high-energy colliders. Over the last few years, there has been growing interest in investigating QI's fundamental facets in relation to relativistic energies, leveraging collider data in high-energy physics (HEP) experiments, notably at the large hadron collider (LHC) at CERN. This Special Issue will primarily focus on physics studies related to quantum entanglement (QE), superposition, and Bell non-locality. The evolving landscape of QI applications in HEP, particularly at CERN, is becoming popular, in conjunction with a huge global progress in quantum technologies. The Special Issue will also encompass topics showcasing the recent advances in quantum computing, quantum algorithms, and quantum machine learning (QML), unveiling promising applications within the field of HEP at CERN.

Guest Editor

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Deadline for manuscript submissions

30 June 2026



Symmetry

an Open Access Journal
by MDPI

Impact Factor 2.2
CiteScore 5.3



mdpi.com/si/192930

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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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