entropy

an Open Access Journal by MDPI

IMPACT FACTOR 2.7

Indexed in: PubMed

CITESCORE 4.7

Quantum Information: Fragility and the Challenges of Fault Tolerance

Guest Editors:

Prof. Dr. Göran Wendin
Department of Microtechnology and Nanoscience-MC2, Chalmers University of Technology, S-412 96 Göteborg, Sweden

Dr. Giulia Ferrini
Department of Microtechnology and Nanoscience-MC2, Chalmers University of Technology, S-412 96 Göteborg, Sweden

Deadline for manuscript submissions:
closed (31 October 2019)

Message from the Guest Editors

The recent advances in scaling up quantum processors into the range of 50–100 qubits make quantum error correction (QEC) and fault tolerance urgent practical issues in order to achieve quantum advantage or even quantum supremacy. Interesting developments in regular QEC include new classes of codes, either in the qubit setting (topological, non-abelian, holographic…) or with continuous variables, such as Gottesman-Kitaev-Preskill (GKP) or cat-codes. However, universal fault-tolerant quantum computation based on QEC is not yet within reach. The near-term challenge is rather to make optimal use of available hardware and software resources. This requires developing useful characterization tools, typically involving the number, connectivity, and coherence of physical qubits, the available gate set, and the number of operations that can be run in parallel. On the software side, machine learning (ML) may be used for optimizing gate sequences, minimizing circuit depths, optimizing variational schemes. Other challenges involve new types of architectures, like dynamical complex systems based on (brain-inspired) adaptive quantum networks.

mdpi.com/si/18474

Special Issue

entropy

an Open Access Journal by MDPI

IMPACT FACTOR 2.7 | Indexed in: PubMed | CITESCORE 4.7

Editor-in-Chief

Prof. Dr. Kevin H. Knuth
Department of Physics, University at Albany, 1400 Washington Avenue, Albany, NY 12222, USA

Message from the Editor-in-Chief

The concept of entropy is traditionally a quantity in physics that has to do with temperature. However, it is now clear that entropy is deeply related to information theory and the process of inference. As such, entropic techniques have found broad application in the sciences.

Entropy is an online open access journal providing an advanced forum for the development and/or application of entropic and information-theoretic studies in a wide variety of applications. *Entropy* is inviting innovative and insightful contributions. Please consider *Entropy* as an exceptional home for your manuscript.

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), MathSciNet, Inspec, PubMed, PMC, Astrophysics Data System, and other databases.
Journal Rank: JCR - Q2 (*Physics, Multidisciplinary*) / CiteScore - Q1 (*Mathematical Physics*)

Contact Us

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

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

mdpi.com/journal/entropy
entropy@mdpi.com
𝕏@Entropy_MDPI