Special Issue

The Mathematics of Structured Experience: Exploring Dynamics, Topology, and Complexity in the Brain

Message from the Guest Editors

This Special Issue is motivated by the Kolmogorov theory of consciousness (KT) and related mathematical frameworks in cognition and consciousness, including active inference and predictive coding. It invites contributions that shed light on the intricate link between brain dynamics and the experiential phenomena they induce. Central to this discourse is the proposition that agents (computational entities) construct compressive models (algorithms) of the world to track world data and guide action planning through objective function evaluation. This perspective underscores the profound impact of model mathematical structure on the brain's dynamic trajectories, or the "dynamical landscape," and on the resulting qualia (structured experience). It opens exciting avenues for empirical investigation and methodological innovation, leveraging advanced concepts from dynamical systems theory, geometry, topology, algorithmic information theory, and critical phenomena theory.

Guest Editors

Dr. Giulio Ruffini

Brain Modeling Department, Neuroelectrics, 08035 Barcelona, Spain

Dr. Johannes Kleiner

1. Munich Center for Mathematical Philosophy, Ludwig Maximilian University of Munich, 80539 Munich, Germany
2. Graduate School of Systemic Neurosciences, Ludwig Maximilian University of Munich, 82152 Planegg-Martinsried, Germany
3. Institute for Psychology, University of Bamberg, 96047 Bamberg, Germany

Dr. Ryota Kanai

Araya Inc., Tokyo 107-6024, Japan

Deadline for manuscript submissions

20 March 2026

Entropy

an Open Access Journal by MDPI

Impact Factor 2.0
CiteScore 5.2
Indexed in PubMed

mdpi.com/si/200135

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

mdpi.com/journal/entropy

Entropy

an Open Access Journal by MDPI

Impact Factor 2.0
CiteScore 5.2
Indexed in PubMed

mdpi.com/journal/entropy

About the Journal

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.

Editor-in-Chief

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

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), Inspec, PubMed, PMC, Astrophysics Data System, and other databases.

Journal Rank:

JCR - Q2 (Physics, Multidisciplinary) / CiteScore - Q1 (Mathematical Physics)

MDPI