# Special Issue

# Time and Time Dependence in Quantum Mechanics

### Message from the Guest Editors

Time enables us to describe changes and order events in daily life and in the laboratories. Physics takes charge of defining the official time by measuring quantum processes in time-frequency metrology and yet, paradoxically, we keep wondering about fundamental questions such as how the times of events such as the arrival of particles at a detector should be described in quantum theory, the meaning of time operators and time-energy uncertainty principles, or the emergence of irreversibility from time-symmetrical laws. Time is also the basic running parameter to narrate quantum dynamics. Geometric phases, quantum transients, the Zeno effect, or short and long deviations from exponential decay are concepts and phenomena used to comprehend and possibly modify dynamics. Dynamical control is often implemented based on adiabatic and sudden approximations and also via shortcuts to adiabaticity. This Special Issue of Mathematics aims at offering a broad perspective of recent work to fathom time in quantum theory and harness the evolution of quantum systems.

### Guest Editors


Prof. Dr. J. Gonzalo Muga

Department of Physical Chemistry, Universidad del Pais Vasco/Euskal Herriko Unibertsitatea (UPV/EHU), Apdo. 644, Bilbao, Spain

Dr. Andreas Ruschhaupt

Department of Physics, University College Cork, T12 YN60 Cork, Ireland


### Deadline for manuscript submissions

closed (30 April 2019)


# Mathematics

an Open Access Journal by MDPI

Impact Factor 2.2
CiteScore 4.6

mdpi.com/si/11522

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

mdpi.com/journal/mathematics

# Mathematics

an Open Access Journal by MDPI

Impact Factor 2.2
CiteScore 4.6

mdpi.com/journal/mathematics

MDPI

# About the Journal

## Message from the Editor-in-Chief

The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

## Editor-in-Chief

Prof. Dr. Francisco Chiclana
School of Computer Science and Informatics, De Montfort University, The Gateway, Leicester LE1 9BH, UK

## Author Benefits

**High Visibility:**

indexed within Scopus, SCIE (Web of Science), RePEc, and other databases.

**Journal Rank:**

JCR - Q1 (Mathematics) / CiteScore - Q1 (General Mathematics)

**Rapid Publication:**

manuscripts are peer-reviewed and a first decision is provided to authors approximately 17.3 days after submission; acceptance to publication is undertaken in 2.8 days (median values for papers published in this journal in the second half of 2025).