Symmetry Applied in Mathematical Modeling and Computational Methods

Guest Editor:

Dr. Luis Acedo
Department of Mathematics, Centro Universitario de Plasencia, University of Extremadura, Avda. Virgen del Puerto, 2, 10600 Plasencia, Spain

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Message from the Guest Editor

Dear Colleagues,

Mathematical modelling has become an essential tool in practically all technical fields nowadays. Applications in all areas of research appear every day: the fields of medicine, engineering, ecology, life sciences, social sciences, economy, psychology, etc., benefit from the emergence of novel mathematical techniques and the application of old ones in creative and synergetic approaches. The relevance of this perspective is so influential at present that cannot be ignored by any researchers in cross-disciplinary fields.

Hybrid numerical-analytical methods such as homotopies, symplectic integration, as well as neural networks in deep learning also benefit from a deeper understanding of its symmetries helping us in developing more efficient algorithms. Some topics are:
• Numerical methods and symmetry;
• Novel techniques of neural network training;
• Mathematical models in physics and symmetry;
• Symmetric networks in epidemiology;
• Symmetric processes in ecological networks.
and more.

We hope that this Special Issue will encourage change and the development of useful new tools and applications in different fields.

Special Issue

Editor-in-Chief

Prof. Dr. Sergei 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.

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