Symmetries in Evolution Equations and Applications

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Message from the Guest Editors

Dear colleagues,

Equations focusing on time-dependent systems play a relevant role in understanding and modelling various physical phenomena. In particular, we mention problems of heat transport and laser propagation in inhomogeneous media. The potential topics range from abstract theories to concrete applications. We aim to deeply discuss the qualitative behavior of the equations. The existence and absence of local and global solutions, the asymptotic analysis of solutions, and the occurrence of blow ups are some of the crucial questions to deal with. Symmetry methods of evolution equations play a crucial role in this investigation: conditions constraining the equation on its Lie and (contact-)point symmetries help in the classification of evolution equations possessing nonlocal symmetries; potential symmetries establishing the equivalence between two different evolution equations originate methods for obtaining new from already known solutions; and algebraic structures of symmetries are useful in studying physical systems and developing admissible transformations among them...

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Special Issue

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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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