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Symmetry in Differential Equations and Integral Operators

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Message from the Guest Editors

Dear Colleagues,

The symmetry of differential equation systems involves a transformation that maps any solution to another solution within the system. For a first-order ODE, the invariance of the ODE under a point symmetry is equivalent to the existence of a first integral for the ODE. However, in general, integral operators are arbitrary to some extent. Indeed, if we have any solution of a linear differential equation which depends on some parameters, then an integral of the solution multiplied by any function of the parameter represents an integral operator, in turn generating solutions of the equation. One could also consider operators which permit the development of a systematic and unified theory of solutions of partial differential equations on the basis of complex function theory. As a result, it seems that a certain type of integral operator is of particular interest for many situations. However, it is also important to study various other types of integral operators since many situations will generate equations where other types of integral operators are applicable and useful. In this SI, we hope to receive papers on the above topics.

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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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