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Geometrization of PDEs and Their Solution by Means of Symmetries

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Deadline for manuscript submissions:
closed (31 October 2020)

Message from the Guest Editors

In recent years, a large number of studies have related PDEs with geometric objects, mainly with a metric tensor. For each PDE, a metric tensor can be defined, i.e., Riemannian or non-Riemannian space, which acts as the "phase space" of the PDE. The Lie symmetries defined by the geometric elements defining the geometry of that space are related with the first integrals and the invariants of the PDE. The last elements can be used to facilitate the solution of the PDE and, if there are enough of them, even to solve the PDE. This Special Issue offers an opportunity to collect a large amount of work and the obtained results on this topic existing so far in the literature and, at the same time, present new avenues and ideas for future steps in this topic.

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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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