



Symmetry and Applications of Differential Geometry to the Differential Equations of Mathematical Physics

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Message from the Guest Editor

Dear Colleagues,

Geometric methods in the theory of differential equations in mathematical physics have a very long history. Over more than one century, the technical gaps that a direct (numerical) analysis can meet in solving and understanding differential equations have met a complementary approach in geometry, in order, for example, to describe no-go directions of investigations or to produce new solutions or invariants.

The symmetry properties of equations can be studied in order to determine solutions with particular properties or to distinguish equations that do not have the same intrinsic properties. Studies on symmetry properties associated with the concept of quantum calculus or stochastic analysis may also be investigated.

Therefore, it seems exciting to propose a Special Issue that intends to gather all these interrelated topics. These ideas and methods have a significant effect on everyday life, as new tools are developed and achieve revolutionary research results, bringing scientists even closer to exact sciences, encouraging the emergence of new approaches, techniques, and perspectives in geometric approaches of differential equations.





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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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