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Lie Theory and Its Applications

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Message from the Guest Editor

Since the end of 19th century when the prominent Norwegian mathematician Sophus Lie created the theory of Lie algebras and Lie groups and developed the method of their applications for solving differential equations, his theory and method have continuously been in focus of research of many well-known mathematicians and physicists. This Special Issue of the journal Symmetry is devoted to recent development of Lie theory and its applications for solving physically and biologically motivated equations and models. In particular, the issue welcomes articles devoted to analysis and classification of Lie algebras, which are invariance algebras of real word models; Lie and conditional symmetry classification problems of nonlinear PDEs; the application of symmetry based methods for finding new exact solutions of nonlinear PDEs (especially reaction-diffusion equations) arising in applications; the application of Lie method for solving nonlinear initial and boundary-value problems (especially those for modelling processes with diffusion, heat transfer, and chemotaxis).

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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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