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Theory and Applications of Special Functions in Mathematical Physics

Guest Editor:

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Message from the Guest Editor

Dear Colleagues,

Different applications of modern engineering and physical sciences require thorough knowledge of applied mathematics, particularly special functions. These are frequently adopted in acoustics, thermodynamics, electromagnetics, and optics, to express the approximate or exact analytical solution of complex problems, thus providing a better understanding of and meaningful insight into underlying properties and mechanisms.

In this Special Issue, we focus on the application of classical and higher-order special functions to advanced problems of mathematical physics that are characterized by specific (i.e., rectangular, cylindrical, and spherical) symmetry or, conversely, rely on more unconventional models. Attention is given, also, to the illustration of properties of novel special functions, with particular attention paid to the relevant governing differential equation; recurrence formulae; as well as efficient computational algorithms, such as those based on uniform asymptotic representations for small and large arguments.

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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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