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New Advances in Special Functions and Their Applications in Science and Mathematics

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Message from the Guest Editors

Special functions, including orthogonal polynomials with symmetric and nonsymmetric parameters, are important in many areas of mathematics and in the applied sciences. For example, they are very important in the numerical analysis of different types of differential equations.

An orthogonal polynomial sequence is a family of polynomials such that any two different polynomials in the sequence are orthogonal to each other under some inner product. The most widely used orthogonal polynomials are classical orthogonal polynomials, consisting of Hermite polynomials, Laguerre polynomials, and Jacobi polynomials, and their special cases for symmetric parameters, namely, Gegenbauer polynomials, which form the most important class of Jacobi polynomials; other special cases include Chebyshev polynomials and Legendre polynomials.

This Special Issue welcomes papers devoted to the theory and applications of special functions, including symmetric and non-symmetric orthogonal polynomials. Emphasis will be placed on the use of any applied polynomial set to handle various differential and integral problems.

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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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