



Applications of Symmetric Functions Theory to Certain Fields

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Deadline for manuscript
submissions:

closed (15 September 2022)

Message from the Guest Editors

Symmetric polynomials and symmetric functions are ubiquitous in mathematics and mathematical physics. For example, they appear in elementary algebra representation theories of symmetric groups and general linear groups over the complex field or finite fields. The theory of symmetric functions has also many applications to enumerative combinatorics, as well as to such other branches of mathematics as group theory, Lie algebras, and algebraic geometry. Indeed, the Frobenius map and its extensions provide a bridge translating representation theory problems to symmetric function problems and ultimately to combinatorial problems. They have also played a central role in random matrix theory in the computation of quantities such as joint moments of traces and joint moments of characteristic polynomials of matrices.

This Special Issue will reflect the diversity of the topics in the applications of symmetric functions, symmetric function spaces and symmetries.





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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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