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Number Theory and Symmetry

Guest Editor:

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Message from the Guest Editor

Dear Colleagues,

This Special Issue, “Number Theory and Symmetry” deals with all topics connecting numbers (integers, algebraic integers) and symmetries. First of all, symmetry entered number theory when Riemann investigated the distribution of prime numbers and for that purpose introduced the complex functional equation and the related Riemann hypothesis (RH) that non-trivial zeros of the Riemann zeta function lie on the symmetry axis $s=1/2$. Then, in a quest to justify RH on physical grounds, the Hilbert-Polya conjecture claimed that the imaginary part of the Riemann zeros on the symmetry axis should correspond to the eigenvalues of a Hermitian operator. It may be that a pseudo-Hermitian operator with parity-time (PT) symmetry would be more appropriate, according to recent work. Besides these classical areas, number fields offer clues to the connection between numbers and symmetries through arithmetic Kleinian groups, geometry and topology. I have in mind the Poincaré conjecture and the whole work of Thurston about 3-manifolds.



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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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