



Mathematical Physics and Symmetry

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Message from the Guest Editor

Starting with key ideas on reflection positivity in quantum physics, the subject has moved in a number of other directions, including the study of stochastic processes that appear in the representation theory of Lie groups. Motivated by reflection symmetries in Lie groups, there is a new trend in the study of representation theoretic aspects of reflection positivity: reflection positive Markov processes indexed by Lie groups, measures on path spaces, and invariant Gaussian measures in spaces of distribution vectors. This provides new constructions of reflection positive unitary representations. Since early work in mathematical physics, starting in the 1970s, and initiated by A. Jaffe, and by K. Osterwalder and R. Schrader, the subject of reflection positivity has had an increasing influence on both non-commutative harmonic analysis, and on duality theories for spectrum and geometry. In its original form, the Osterwalder-Schrader idea served to link Euclidean field theory to relativistic quantum field theory.....





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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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