

Special Issue

Stochastic Differential Equations: Theory, Methods, and Applications

Message from the Guest Editor

Stochastic differential equations constitute a powerful mathematical apparatus for dealing with phenomena whose evolution is governed by random forces. Stochastic models involving such equations are used in many areas—for example, in physics, molecular biology, finance, climatology, ocean science, electrical engineering, and mechanics. Trajectories of solutions of stochastic differential equations determine the paths of the processes studied. The practical nature of these equations is not separated from theory; the two go hand in hand. Problems of existence of the solution, its uniqueness, its properties, asymptotic behavior, approximate solution, control of solution, numerical methods, and symmetry methods are just a few of the issues deserving a mention. Therefore, this Special Issue invites articles on recent advances in both broad aspects of stochastic differential equations, namely, in theory and applications.

Guest Editor

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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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