Special Issue

Recent Progress in Studies of Stability of Numerical Schemes

Message from the Guest Editors

Dear colleagues, Stability of numerical methods for solving differential equations is a fundamental property that is necessary for the method to produce a valid solution. There are various concepts for numerical stability for ODEs or PDEs. The von Neumann analysis is the standard tool for establishing the stability of a numerical scheme for PDEs. However, recently, a number of studies have addressed the stability of numerical methods (e.g., the split-step method for dispersive/parabolic equations, or the method of characteristics for hyperbolic equations) with approaches that go beyond the von Neumann analysis. The purpose of this Special Issue is to collect new theoretical and numerical studies on techniques used for proving the stability/instability of numerical schemes, which extend or improve the known results. Contributions highlighting structure-preserving and symmetry-preserving numerical methods are particularly welcome.

Guest Editors

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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.

Editor-in-Chief

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