



Journal of Function Spaces

Special Issue on

Partial Differential Equations and Function Spaces

CALL FOR PAPERS

The aim of this special issue is to present current perspectives in the classical and modern development that address the interactions between function spaces, PDEs, and dynamical systems. This issue focuses on theory of function spaces, PDEs, and their applications. Partial Differential equations have played a central role in modeling a wide variety of phenomena in physics, biology, and other applied sciences. The history of theory of function spaces has seen ubiquitous and useful applications in solving differential equations. There are intimate connections between these fields. For instance, the solutions of evolutionary Hamiltonian PDE and associated variational problems require the use and intrinsic characterization of Sobolev spaces and their weighted versions and sometimes their phase space variants. In turn, the theory of those function spaces consisting of distributions or generalized functions might provide more accurate measurements than using only classical derivatives. It often gives remarkable insight into a PDE problem. Thus many of the fundamental results come from relatively simple yet highly creative applications of theory of function spaces. Such development requires introducing a breadth of new methods and techniques as well as fundamental theory, for which the motivating force behind is applications of differential systems and function spaces. In summary, the underlying theme is to highlight the use of various function spaces related to the analytical aspects of PDEs and dynamical systems. We hope to provide a platform to bring together experts as well as young researchers in the area to promote and share knowledge and to foster communications and applications. The editors of the special issue invite research articles as well as review articles.

Potential topics include, but are not limited to:

- ▶ Function spaces associated with differential operators
- ▶ Differential inequalities and function spaces
- ▶ Spectral theory and differential operators
- ▶ Fourier, wavelet, and harmonic analysis methods in function spaces (Hölder spaces, Sobolev spaces, Morrey spaces, Hardy spaces, Besov and Triebel-Lizorkin spaces, modulation spaces, etc.)
- ▶ Functional analysis and PDEs
- ▶ Characterization of differential-integral operators in Hilbert spaces and Banach spaces
- ▶ Analytical behavior (regularity, smoothing, singularity, and asymptotics) of differential and integral equations and dynamical systems
- ▶ Probability space and techniques applied to differential equations

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