Special Issue

Advances in Portfolio Optimization and Computational Finance: Bridging Theory, Machine Learning, and Real-World Applications

Message from the Guest Editor

In the ever-evolving field of computational finance, portfolio optimization stands as a central challenge; in this context, researchers and practitioners seek to develop strategies that effectively balance risk, return, and other critical constraints. The traditional portfolio optimization model, grounded in Markowitz's mean-variance analysis, has been expanded via various innovative methodologies that address practical constraints, adapt to market dynamics, and respond to investor-specific objectives. The current literature regarding portfolio optimization explores numerous approaches, from those that refine risk-adjusted return metrics to those that accommodate market conditions, transaction costs, and investor preferences. These advancements underscore the importance of integrating mathematical rigor with real-world applicability, prompting a more nuanced examination of the dynamic interactions between risk, return, and financial constraints.

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Message from the Editor-in-Chief

The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

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