Special Issue

Next-Generation Quantum Security: Algorithms, Cryptography, and Computational Breakthroughs

Message from the Guest Editors

The impending arrival of practical quantum computing represents a significant shift in cybersecurity. It poses a serious threat to widely used public-key cryptographic systems while also fostering remarkable innovation in cryptographic algorithms and hardware architectures. This Special Issue focuses on the critical research challenges and breakthroughs in next-generation quantum security, specifically targeting cryptographic solutions that are resilient against quantum attacks. As quantum technology progresses, the global research community is developing innovative strategies to ensure long-term security, efficiency, and practicality across various computing environments. We invite researchers to submit original research articles and comprehensive reviews that explore both the theoretical and practical aspects of post-quantum cryptography (PQC), homomorphic encryption, data security, and AI security. We also encourage submissions on security and privacy technologies of secure systems in the post-quantum era.

Guest Editors

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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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