

Special Issue

Model Predictive Control: Mathematical Foundations and Emerging Engineering Challenges

Message from the Guest Editors

Model predictive control (MPC) has become a cornerstone in modern control engineering, offering a versatile framework that balances system constraints, optimization objectives, and prediction-based feedback. As the complexity and scale of engineering systems continue to grow—ranging from autonomous vehicles and energy systems to robotics and process industries—MPC faces new challenges in mathematical formulation, computational feasibility, and real-world deployment. This Special Issue aims to collect original research and review articles addressing the **mathematical foundations, computational methods, and engineering implementations** of MPC. We particularly welcome works that explore robust/stochastic MPC, data-driven and learning-based approaches, distributed and embedded MPC architectures, and applications that reveal new insights into system-level challenges. We look forward to your valuable contributions that advance both theoretical insights and practical applications of MPC.

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About the Journal

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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