

Special Issue

Mathematical Plasma Physics

Message from the Guest Editor

Plasma physics has a deep and wide pool of mathematical problems. Answers to many of these are still awaiting and can greatly impact fusion research. The developing field of mathematical plasma physics spans various areas that run plasma physics, from dynamical systems and Hamiltonian geometry to partial differential equations and optimization. More specifically, it involves chaos theory, symmetry methods, normal forms, presymplectic mechanics, invariant submanifolds, stability analysis, Poisson operators, variational techniques, and stochasticity, among others. The main scope of the diverse mathematical framework is controlled fusion with all its challenges. As such, the ultimate goal is to give decisive answers to open theoretical questions on plasma confinement and to build rigorous computational objectives for the optimal design and performance of fusion reactors. In this Special Issue, we aim to present recent developments in mathematical plasma physics, emphasizing magnetic field line flow, guiding-centre dynamics, magnetohydrodynamic equilibria, gyrokinetics, magnetic coil geometry, and divertors.

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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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