

Special Issue

Advanced Simulations for Nuclear Fusion Energy Systems

Message from the Guest Editors

As the global demand for clean, sustainable, and reliable energy sources continues to rise, advancing research in fusion nuclear energy and thermal energy systems has become increasingly important. A major challenge in the development of these technologies lies in optimizing their design and performance under extreme operational conditions, such as high temperatures and complex thermal management requirements. The integration of advanced materials and components, along with the need for enhanced efficiency, calls for innovative engineering and design strategies.

Numerical simulation plays a critical role in addressing these challenges, enabling researchers to model and predict the thermal, mechanical, and multiphysical behavior of nuclear energy systems under a wide range of conditions. Through simulation, it is possible to test new designs, optimize performance, and develop more efficient solutions without the need for extensive physical prototyping. These methods, combined with analytical and computational approaches, are essential for advancing the design and optimization of next-generation fusion nuclear energy systems.

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Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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