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Symmetry in Nonlinear Interaction of Femtosecond Laser Radiation with Matter

Guest Editors:

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Deadline for manuscript submissions:
30 June 2026

Message from the Guest Editors

Dear Colleagues,

Many high-order nonlinear phenomena, including high harmonic generation, tunneling ionization and so on, among others, can occur when a powerful femtosecond laser interacts with gaseous, aqueous, or solid objects.

The output signal is primarily influenced by the symmetry property of the target. As our understanding of the connection between the target's symmetry property and the characteristics of an ultrafast signal deepens, predicting the features of the output signal becomes more feasible. Furthermore, the ultrafast output signal can serve as an effective tool for detecting the symmetry property of an unknown target. In particular, achieving ultrafast time-resolution in monitoring phase transitions, while considering changes in the symmetry property, necessitates the study of the causal relationship between the sample's symmetry and the features observed in the output signal.

In this Special Issue, original research articles and reviews are welcome. Research areas may include (but are not limited to) the following: space-time symmetry, nonlinear interaction, strong-field ionization, high harmonic generation, time-resolved spectroscopy, and electron dynamics.

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Editor-in-Chief

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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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