Laser and Particle Beams

Hindawi

Special Issue on

Conference Issue: Laser Matter Interaction

CALL FOR PAPERS

The continuous advancement of laser technology and the numerous applications of the interaction of light with matter has generated increasing scientific interest in many different fields. Laser pulses have an extremely wide range of duration, energy, and wavelength and can be used to heat and compress matter or to produce secondary sources of particles or radiation. Relevant applications, such as inertial confinement fusion and particle accelerators, are mainly studied in large facilities with multiple laser systems. Interesting developments on the pulse characteristics, material technology, and diagnostics can also be obtained in moderately sized laboratories.

The development of short and powerful laser pulses allows progress in fundamental physics studies and in the realization of powerful particle sources for the study of their interaction with materials and for biomedical diagnostics and therapy. Research on fusion energy relies on high-energy multiple laser systems with finely controlled pulse shapes and sophisticated target systems, as well as advanced diagnostics. New power plants are now in operation and others are under development. This can lead to new regimes of laser-matter interaction, requiring suitable modelling, diagnostics, and development of potential applications.

The aim of this Conference Issue is to stimulate the development of research in the broad field of laser-matter interactions with high-power lasers, offering the opportunity to present and discuss new results and projects. We welcome both original research and review articles.

This Conference Issue is being run in partnership with the 36th European Conference on Laser Interaction with Matter, Frascati, Italy, from the 19th to 23rd September 2022 (https://agenda.enea.it/event/228/). Whilst submissions are invited from all researchers, we particularly welcome full-length articles both from attendees and those that have submitted abstracts and posters for consideration at this conference.

Potential topics include but are not limited to the following:

- Physics of nanosecond to attosecond laser-matter interactions and laser-generated plasmas
- High power and/or high energy laser facilities and related technologies
- Ultraintense and/or ultrafast laser secondary sources in inertial confinement fusion research
- Laser-driven matter acceleration and compression
- Physics of thermonuclear targets and ignition approaches
- Target technology and applications
- Lasers in material processing and characterization
- Modeling of laser-matter interaction phenomena
- Laser and plasma diagnostics
- Plasma instabilities
- Extreme ultraviolet (EUV)

Authors can submit their manuscripts through the Manuscript Tracking System at https://review.hindawi.com/submit?specialIssue=812670.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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