



National Institute for
Fusion Science

First Announcement



21st International Workshop on Plasma Edge Theory in Fusion Devices

19-22 October 2027
Nagano, Japan

<https://pet21.nifs.ac.jp>





On behalf of the Local Organizing Committee and the International Scientific Committee, we are pleased to invite you to the 21st International Workshop on Plasma Edge Theory in Fusion Devices (PET21), organized by the National Institute for Fusion Science, National Institutes of Natural Sciences. The workshop will be held from Tuesday, 19 October to Friday, 22 October 2027, at the JA Nagano Prefecture Building in Nagano, Japan.

As in the preceding workshops, PET21 will provide a forum for discussing the current status and recent advances in the theory and modeling of edge plasmas in magnetic confinement fusion devices. Emphasis will be placed on the development of theoretical models and appropriate numerical methods, as well as their comparison with experimental observations. The workshop will consist of invited lectures, contributed oral presentations, and poster presentations. Contributors giving invited and oral presentations are also encouraged to present a poster. Invited papers and accepted contributed papers will be included in the workshop proceedings and will undergo the usual peer-review process in Contributions to Plasma Physics. A welcome reception and a banquet will be held on the evenings of 19 October and 21 October, respectively.

We look forward to welcoming you to Nagano.

PET21 Local Organizing Committee

The following topics are intended to be covered by the workshop:

1. Basic plasma edge theory

- Magnetic boundary structure including magnetic stochasticity and alternative magnetic configurations
- Edge transport parallel and perpendicular to magnetic field, electric field effects, instabilities, turbulence, and boundary conditions
- Neutrals and multi-ion theories, radiation
- Plasma detachment including cold and dense buffer plasmas
- New edge-relevant numerical and computational methods

2. Models of special phenomena and edge control

- L-H transition, interplay between pedestal and SOL, ELMs (including control, small and no ELM regimes)
- Flow patterns, momentum transport, and impurity retention

3. Integrated plasma modelling

- Kinetic and Monte Carlo codes, Multifluid codes
- Effects of plasma edge/core coupling
- Validation of edge plasma theories and codes
- Machine learning and AI-assisted techniques for edge plasma theory and simulations

IMPORTANT DATES

- January 2027: Second Announcement
- April 1, 2027: Deadline for abstract submission, Start of registration
- End of May 2027: Notification to contributors
- End of June 2027: Deadline for early registration
- End of July 2027: Deadline for registration
- October 19, 2027: Deadline for manuscript submission and start of workshop

INTERNATIONAL SCIENCE COMMITTEE

M. Kobayashi (chair), NIFS, Toki, Japan
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LOCAL ORGANIZING COMMITTEE

M. Kobayashi (NIFS, chair), K. Hoshino (Keio Univ.), G. Kawamura (QST), H. Natsume (Tokai Univ.), S. Saito (Yamagata Univ.), M. Shoji (NIFS), H. Tanaka (Nagoya Univ.), S. Togo (Tsukuba Univ.)

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