# AAPPS-DPP2025 Invited/Plenary Nomination Form

0. **Conference(s): select option 1) or 2)** (strikethrough or delete)
   1) Individual speaker Nomination: reply to 1, 2, 3, 4, 5, 6

1. **Recommender's / Organizer's name, E-mail, and affiliation**
   Name: Izumi Murakami
   E-mail: murakami.izumi@nifs.ac.jp
   Affiliation: National Institute for Fusion Science

2. **Session category: 2**: Dusty/Quantum plasma, plasma sources, basic experiments, A&M,

3. **Type:** Plenary

4. **Speaker(s):**
   Name(s): Kenichi Nagaoka
   E-mail(s): nagaoka@nifs.ac.jp
   Affiliation(s): National Institute for Fusion Science

5. **Rationale (or session title and scope)**:
   Dr. K. Nagaoka significantly contributed to characterizing the formation and dynamics of negative ion meniscus in experimental studies. The asymmetric structure of the negative ion meniscus was identified in the detailed analyses of the experimentally measured phase space structure, which comprises three Gaussian beam components [1]. The dynamic responses of the meniscus to externally applied RF field were also identified with a filament-arc negative ion source. The degradation of the beam convergence due to the meniscus response to the RF field was understood by the relation between beam divergence and perveance [2]. This progress based on plasma physics may play an important role in negative ion beam divergence control and widely expand applications of negative ion beams as well as ITER-NBI development.

6. **Short abstract of each talk**
   Authors: Kenichi Nagaoka
   Title: Negative-ion-plasma meniscus and beam divergence control
   Short Abstract:
   Beam divergence control is widely recognized as one of the critical issues for applications of negative ion beams. A great deal of effort has been devoted to the study of beam convergence control in ITER-NBI development. Two progresses of the negative ion meniscus formation physics, which are different from those of the positive ion meniscus and significantly important for beam convergence, are going to be reported. One is the asymmetric structure of the meniscus closely related to the generation of three Gaussian beam components in a single beamlet. The other is the direct response of the negative ion meniscus to the externally applied RF field. The mitigation of the beam convergence degradation due to RF field is also discussed based on the perveance dependence. In this talk, it will be reported that the basic studies of the negative ion meniscus formation can greatly contribute to addressing a critical challenge in the ITER project.

   [1] Y. Haba, K. Nagaoka et al., 'Characterization of negative ion beam focusing based on phase space structure', New J. Phys., 22, 023017 (2020).
   [2] K. Nagaoka, H. Nakano, et al., 'Response of negative ion beamlet width and axis deflection to RF field in beam extraction region', Sci. Reports 15, 1494 (2025).