

Development of a User-Facility Plan for NDCX-II

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The second Neutralized Drift Compression Experiment (NDCX-II) will enable enhanced experiments in warm dense matter (WDM) and aspects of ion-driven target physics for inertial fusion energy (IFE). These experiments are relevant to processes in the interiors of giant planets and to the accelerator and high-energy-density (HED) science underpinning the concept of heavy-ion fusion. There is a perceived need to cultivate the development of a facility-user population on NDCX-II as a feature of future grant applications for facility support from the Department of Energy Office of Science. HED/IFE science solicitations in 2013 are aimed at universities and DOE laboratories.

The development of a user-facility plan for NDCX-II is being carried out over the next 12 months, toward the goal of developing the user-base dimension (concept, policy, targeted groups both national and international), drawing upon experience with other-Lab user-facility models. Progress will be presented. NDCX-II schedule-allocation categories may include facility maintenance and development, IFE-motivated science studies, and basic HED science, WDM, and beam science studies. A possible set may be:

1. Experiment time, i.e., "beam time"
2. Facility beam-scientist time, i.e., liaison support between a user and the facility
3. Beam-physics and beam-engineering studies to advance facility optimization
4. Scheduled and unscheduled facility maintenance
5. User-customized beam-line and/or target-chamber reconfiguration
6. Diagnostics
7. Target fabrication

Prioritization (schedule flexibility) and allocation (schedule fraction) will evolve during the progressive transformation of NDCX-II from a facility for collaborative experiments in which external users work closely with scientists and engineers of NDCX-II into a facility that is increasingly used by independent users. The NDCX-II facility itself, the NDCX-II operational regimes, and the beam-enabled science and technology will contribute to the portfolio of anticipated experimental and theoretical effort. As a user facility, NDCX-II could field additional diagnostic capabilities in a collaboration of external users and NDCX-II staff scientists and engineers and could facilitate independent external users who compete for beam time and require a site-provided suite of diagnostic capabilities. NDCX-II could expand its user-facility identity as the user-community expertise, enthusiasm, and demand develop and as the NDCX-II capabilities expand, become documented quantitatively, and become familiar to a wider set of users.

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