

Abstract Submitted
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Commissioning and Plans for the NSTX-U Facility MASAYUKI ONO, PPPL, Princeton University, Princeton NJ 08543, NSTX-U TEAM — The National Spherical Torus Experiment - Upgrade (NSTX-U) has started its first year of plasma operations after the successful completion of the CD-4 milestones. The unique operating regimes of NSTX-U can contribute to several important issues in the physics of burning plasmas to optimize the performance of ITER. The major mission of NSTX-U is also to develop the physics and technology basis for an ST-based Fusion Nuclear Science Facility (FNSF). The new center stack will provide toroidal field of 1 Tesla at a major radius of 0.93 m which should enable a plasma current of up to 2 mega-Amp for 5 sec. A much more tangential 2nd NBI system, with 2-3 times higher current drive efficiency compared to the 1st NBI system, is installed. NSTX-U is designed to attain the 100% non-inductive operation needed for a compact FNSF design. With higher fields and heating powers of 14 MW, the NSTX-U plasma collisionality will be reduced by a factor of 3-6 to help explore the trend in transport towards the low collisionality FNSF regime. If the favorable trends observed on NSTX holds at low collisionality, high fusion neutron fluences could be achievable in very compact ST devices.

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