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**Progress and plans for NSTX Upgrade and prospects for next-step spherical tori<sup>1</sup>**

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The National Spherical Torus Experiment Upgrade (NSTX-U) Project at the Princeton Plasma Physics Laboratory was recently completed and achieved first test plasma in August 2015. When fully operational, NSTX-U will be the most capable spherical torus (ST) facility in the world magnetic fusion program and will substantially broaden tokamak physics understanding. NSTX-U will expand access to plasma regimes with significant rotation and rotation-shear effects, and will access a unique regime of high plasma beta and reduced collisionality which will strongly influence plasma transport. The unique operating regimes of NSTX-U will also contribute to several important issues in the physics of burning plasmas. A major mission of NSTX-U is to develop the physics basis for ST-based fusion applications such as a Fusion Nuclear Science Facility (FNSF) or Pilot Plant. An ST-based FNSF has the promise of achieving the high neutron fluence needed for reactor component development and testing with relatively modest tritium consumption. Recent studies also indicate that tokamak Pilot Plants utilizing high-temperature superconductors may optimize near an intermediate aspect ratio of  $A = 2$  with several attractive physics and engineering design features. Progress and plans for NSTX-U research and prospects for next-step ST devices will be discussed.

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