Progress on developing the spherical tokamak for fusion applications

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Outline (page 1)

1. Title page
2. Outline
3. Overview: Role/mission of ST in fusion (FNSF, ITER, Pilot)
4. Motivation for NSTX-U and recent FNSF studies
   - Recent NSTX progress/achievements toward FNSF (microtearing, stability/disruptions)
   - Gaps to FNSF
   - Motivation for NSTX Upgrade to narrow/fill gaps
   - FNSF studies since Pilot Plant studies

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5. CHI and non-inductive ramp-up calculations using TSC (Raman+Kessel)
   - Mention benefits of ECH (5 year plan)
6. Non-inductive sustainment calculations vs. range of parameters
   - Few key projections/results from Menard/Gerhardt papers
7. Divertor studies:
   - Snowflake performance, feasibility in NSTX-U, possibility of cryo-pumping (5 yr plan)

Outline (page 2)

9. Pictures of test-cell clearance, progress on interior/exterior of vessel
10. Centerstack status/progress
    - Fault → new soldering method, friction-stir welding, flex joints, VPI, OH winding plans
11. 2nd NBI status/progress
    - NBI port, NBI box lift, beam dump

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9. ST-FNSF parameters vs. R for fixed wall loading
    - Include achievable engineering Q vs. thermal efficiency and size
10. Device/coil layout for actual equilibrium
    - PF coils at ends of CS – UW calcs, Ali Z to check insulator capabilities
    - Removable top-lid, horizontal modular divertor maintenance
    - Show design of Bitter coils for PF magnets at ends of TF
11. Divertor heat flux projections
    - without and with snowflake
    - Impact of snowflake on device layout
12. TBR calculations – 2D and any 3D (in progress)

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13. Summary