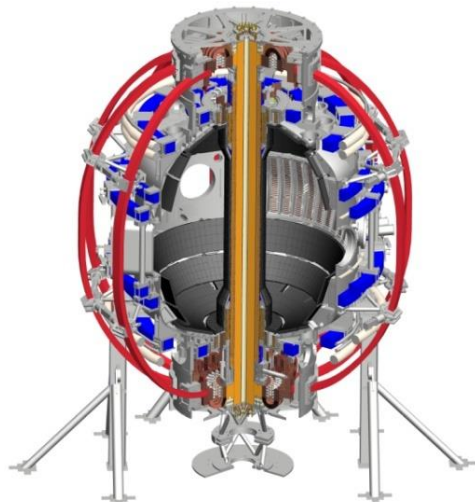


# Particle Control Task Force

R. Maingi, J. Canik

NSTX-U Research Forum  
PPPL LSB B318  
February 26, 2015

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# Particle Control Task Force (PC-TF) Guidance

- Co-Leaders: Rajesh Maingi, John Canik
- Task force goal:
  - “Develop pumping and fueling tools, operating scenarios, and control systems to achieve main-ion and impurity density control for long-pulse”
- Scope includes XPs related to:
  - Main-ion fueling optimization via PCS and/or real-time control
  - Wall coating and preparation optimization for increased particle pumping
  - Reduction / control of impurity ion source rates
  - Natural and paced ELMs for impurity and main ion flushing
  - Real-time density measurements for density feed-back control
  - Physics design and performance characterization of divertor cryo-pump (if/as resources permit implementation of cryo-pump)
- Due date: ASAP, end of FY16 run for non-cryo elements

# Agenda

Time	Presenter	Title	Category
9:00	Maingi	Agenda and guidance	
9:10	Lunsford	Multi-species particle injection for ELM pacing and impurity transport	Particle control: B phase
9:15	Lore	ELM pacing with 3D fields in boronization operational phase for main ion control	Particle control: B phase
9:20	Canik	Characterize plasma near planned plenum entrance position	Particle control: B phase
9:25	Battaglia	Optimize gas fueling for low density startup and H-mode access	Particle control: both B/Li
9:30	Battaglia	Establish minimum SOF density vs Ip ramp rate	Particle control: both B/Li
9:35	Gray	Development of Small ELM regimes	Particle control: both B/Li
9:40	Soukhanovskii	Divertor gas puff effect on impurity reduction	Particle control: both B/Li
9:45	Soukhanovskii	Boundary diagnostic-optimized configuration (BDOC) for model comparisons.	Particle control: both B/Li
9:50	Soukhanovskii	Assess high-Z granule injection	Particle control: Li phase
9:55	Lunsford	Lithium granule injection into ELM free H-modes with lithium conditioned walls	Particle control: Li phase
10:00	Canik	Re-establish ELM pacing via 3-D fields in NSTXU	Particle control: Li phase
10:05	Lore	Combining ELM pacing with divertor gas injection for impurity control	Particle control: Li phase
10:10	Ahn	Combination of 3D fields with snowflake for impurity control	Particle control: Li phase
10:15	Scotti	Optimization of helium-dispersed lithium evaporation to understand role of PFCs without direct lithium evaporation	Particle control: Li phase
10:20	Goldston	EHO Scoping Study	Particle control: Li phase
10:25	Koleman	EHO 3D coil interaction (possible control)	Particle control: Li phase
10:30	Golfinopoulos	Coupling to Plasma Fluctuations Using Amplitude Modulation of RF Antennas: A Shortcut to Driving the EHO?	Particle control: Li phase
10:35	Maingi	Controlled introduction of Lithium into NSTX-U	B->Li transition
10:40	Soukhanovskii	Recycling and pumping with lithium coatings	B->Li transition
10:45	Allain	Study of the chemical evolution during transition from B to Li-based conditioning on D retention in NSTX-U with the Materials Analysis Particle Probe (MAPP)	B->Li transition
10:50	Scotti	Characterization of carbon and lithium sources following first introduction of lithium in NSTX-U	B->Li transition

10:55 All Discussion of related proposals submitted to other TSG's

11:10 All Discussion and prioritization