NSTX-U

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Transport and Turbulence breakout session for NSTX-U 2015 Research Forum

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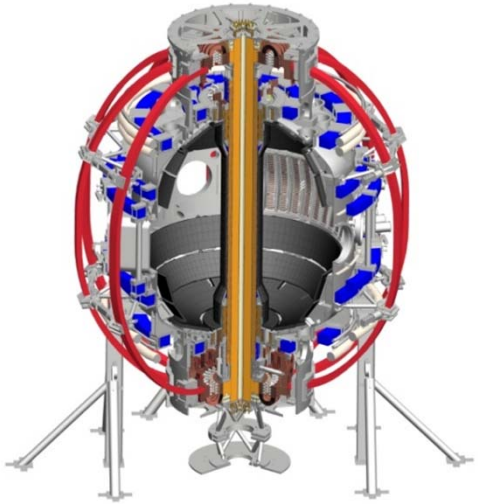
Walter Guttenfelder, Leader
Yang Ren, Deputy
Weixing Wang, Theory/Modeling
Kevin Tritz, University Representative

FY15 Research Forum
Feb. 24-27, 2015



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Priorities motivated by FY15 milestones, 5 year plan thrusts & Research Plans from PAC35

Milestones

- **(R15-1)** Assess H-mode τ_E, pedestal and SOL characteristics at high B_T, I_p, P_{NBI}
- **(Joint Research Target 2015)** Quantify impact of broadened current and pressure profiles on confinement and stability

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PAC plans

- Characterize H-mode confinement scaling at increased B_T/I_p = 0.8 T/1.6 MA
- Explore parametric transport and turbulence dependencies with q and flow profiles using expanded NBI flexibility, 3D coils
- Measure CAE/GAE mode frequencies and structure (BES, reflectometry)
- Plus, we got scolded for not addressing (electron) particle transport

5 year plan Thrusts

- Thrust 1: Characterize H-mode global energy confinement scaling in the lower collisionality regime of NSTX-U
- Thrust 2: Identify regime of validity for instabilities responsible for anomalous electron thermal, momentum, and particle/impurity transport in NSTX-U
  - Low-k modes ($k_\perp \rho_s \leq 1$): ITG/TEM/KBM, MT } drift waves
  - High-k mode: ETG
  - GAE/CAE/KAW } Alfvén eigenmodes
- Thrust 3: Establish and validate reduced transport models

T&T FY15 XPs and prioritization

- 19 XPs received requesting 12.25-20 run days
- T&T allocated 5.5 run days
  - 4 days for priority 1 (R15-1 likely to be charged 2-3 days)
  - 1.5 days for priority 2
- For prioritization, we need to consider:
  1. Viability of proposal
  2. FY15 milestones, PAC goals, 5 year plan priorities, ITPA, APS, IAEA
  3. Overlap between XPs, how can we combine (cross-TSGs are favored)
  4. Post-doc & student commitments

T&T Breakout Agenda (Wed. 1:30-5:00, B252)

#	Time	Speaker	XP Title		Req	Min
	1:30	W. Guttenfelder	Intro (priorities, run guidance, diagnostics availability)		-	-
1	1:35	S. Kaye	Ip, BT confinement scaling (R15-1)		3	3
2	1:42	N. Crocker	Investigate core energy transport via HHFW		0.5	0.25
3	1:49	K. Tritz	Correlation of *AE bursts with fast core Te measurements		0.5	0
4			Perturbed edge impurity transport		1	0.5
5	2:01	J. Munoz-Burgos	Core impurity transport at fixed q using ME-SXR		1.5	1
6	2:08	Delgado-Aparicio	Impurity transport in electron RF-heated scenarios		1	1
7			Impurity transport vs. torque in NBI H-modes		1	1
8	2:20	F. Scotti	Characterization of Intrinsic impurity transport in NBI H-modes		0	0
9	2:27	Y. Ren	Perturbative particle transport with SGI in L- and H-modes		1	0.5
10			Validation of GK codes in NBI L-modes		1	0.5
11			Investigate effects of q profile on T&T in H-modes		1	0.5
12	2:42	H. Yuh	Reverse shear confinement with off-axis NBI		2	1
13	2:49	W. Guttenfelder	Perturbative momentum transport in L- and H- modes		1	0.5
14			Investigating influence of rotation profile on T&T		1	0.5
15	3:01	G. McKee	Impact of 3D fields on T&T, ELMs		1	0.5
16	3:08	J.K. Park	Localized 3D field effects on momentum transport and confinement		0.5	0.5
17	3:15	D. Smith	2D observations of GAMs and zonal flows		1	0.5
18			Dependence of low-k turbulence on rho*		1	0.5
19	3:27	N. Mandell	Investigating small-scale edge turbulence with GPI		1	0.5
	3:34-5:00		Prioritizing	Total:	20	12.25