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FY2011-12 NSTX Wave-Particle Interaction Topical Science Group Planning

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FY2011-12 NSTX Research Forum
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WPI TSG Research Priorities & ITPA Participation

Research Priorities:

- Utilize HHFW heating and current drive to assist non-inductive plasma current ramp-up and sustainment (R12-2) [with SFSU TSG]
- Characterize and optimize high-harmonic fast wave coupling in deuterium H-mode plasmas
- Assess predictive capability of mode-induced fast-ion transport (IR12-2)
- Extend TAE/EPM studies to H-mode plasma

ITPA Participation:

- TC-9 Scaling of intrinsic plasma rotation with no external momentum input
- TC-14 RF rotation drive
- IOS-5.2 Maintaining ICRH coupling in expected ITER regime
- EP-2 Fast-ion loss and redistribution from localized Alfvén eigenmodes
- EP-4 Effect of dynamical friction (drag) at resonance on nonlinear Alfvén eigenmode evolution
- EP-6 Fast ion losses and associated heat load from edge perturbations (ELMs and RMPs)

Draft WPI TSG Meeting Agenda

Thursday 9:00 AM – 12:00 Noon in LSB233

Time	Presenter	Title
9:00	G. Taylor	FY11-12 WPI TSG Resaerch Planning
		Overview of HHFW Low I _p Experiments (details presented in SFSG TSG)
		Assess HHFW+NBI H-Mode Operation with Pnbi ~ 6 MW
9:15	J. Hosea	Study HHFW Power Coupling Versus ELM Activity
		RF Heating at Divertor/SOL Regions
		Turbulence Characteristics for HHFW Saturated Stored Energy versus RF Power
9:30	M. Podesta	HHFW Absorption in NBI-Heated Plasmas
		Dependence of TAE Dynamics on Plasma Rotation
		Clamping of Edge Rotation by HHFW
9:45	E. Fredrickson	Documentation of GAE Avalanches
		Document of High Frequency CAE
		Documentation of Angelfish
		H-mode TAE Avalanches
		TAE Antenna Commissioning
10:05	M. Bell	HHFW Heating to Increase Non-Inductive Current Fraction in NBI H-modes
10:10	N. Crocker	Investigation TAE Radial Phase Variation
		Reflectometer Array
10:20	D. Smith	Measure HHFW Wavefield
10:25	D. Green	Benchmark Predictive Capability of Advanced Quasi-linear RF Simulation Codes.
10:30	R. Maingi	Comparison of H-mode Pedestal Characteristics with RF and NBI
10:35	A. Loarte	Assessment of effects of 3-D fields on fast particle losses in ITER
10:40	A. Bortolon	Effect of Low Frequency MHD on Fast-Ion Confinement
		Effect of Induced 3D Fields on Fast-Ion Distribution
		t-FIDA Commissioning
		Effect of High Frequency Bursting Modes on NBI Current Drive Efficiency
11:00	A. Diallo	Plasma Current Scaling of the Pedestal Structure in RF Heated ELMy H-mode
11:05	S. Medley	High Energy Feature Study with NPA and NBI Scans
11:10	S. Kaye	Assessment of Fast Ion Loss by Microturbulence
11:15	G. Taylor & M. Podesta	Discussion, Consolidation & Prioritization of XPs (until about noon)

WPI TSG Run Time Request & Guidance

- 27 XP ideas requesting 23.75 run days, 14.55 minimum run days needed:
 - 10 XP's address NSTX research milestones
 - 21 XP's address ITPA tasks
 - 3 XP's are preparation for NSTX-U
- 2 XMPs; 4 days for HHFW conditioning & 1 day for tFIDA
- WPI TSG guidance:
 - FY11: 1st priority = 3 days + 2nd priority = 1 day
 - FY12: 1st priority = 4.5 days + 2nd priority = 1.5 days
- Meeting to plan HHFW start-up & I_p ramp-up at 12:00 noon on Thursday in B-252 with SFSU TSG following WPI TSG meeting:
 - Requesting some run time for low I_p HHFW from SFSU TSG