



# Purpose and Agenda

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**FY99 NSTX Research Forum**  
January 12-14, 1999  
Princeton Plasma Physics Laboratory

# DOE Selected Excellent Researchers from 13 Fusion Institutions to Begin NSTX Collaboration in FY99



**Columbia University (Paoletti, Sabbagh, et al.)**

**Fusion Physics & Technology, Inc. (Levinton)**

**General Atomics (Pinsker, Schaffer, Lao, et al.)**

**Johns Hopkins University (Finkenthal, Stutman, et al.)**

**Lawrence Livermore National Laboratory (Allen, Porter, Rognlien)**

**Los Alamos National Laboratory (Maqueda, Wurden)**

**Massachusetts Institute of Technology (Bers, Bonoli, Ram, et al.)**

**Oak Ridge National Laboratory (Houlberg, Maingi, Swain, et al.)**

**Sandia National Laboratory (Nygren, Ulrickson)**

**University of California at Davies (Luhmann, et al.)**

**University of California at Los Angeles (Peebles, et al.)**

**University of California at San Diego (Mau)**

**University of Washington (Jarboe, Raman, et al.)**

# Research Forum Is A Critical Element in Planning the NSTX National Program



- Begin the process of Team building
- **Develop** the scientific elements of **Phase-I (5/99–4/00) Experimental Tasks**
- **Update** the scientific elements of **Phase-II (5/00–9/01) Research Program**
- FY97 and FY98 Forums Focused on developing the scientific elements of the Phases-I & II Research Program, and strongly influenced the present Program vision

# NSTX Experimental Task (ET) and Working Group (WG) Sessions Form the Centerpiece of the Forum



- **Produce ET reports** (by **January 29, 1999**) that identify the scientific goals for the Experimental Proposals (XP) of the Phase-I Experimental Task
- **Produce Update WG Reports** (by **January 29, 1999**) that identify the scientific opportunities for developing Phase-II NSTX Research Program

## *ET Discussion and WG Leaders will:*

- **Organize and conduct** sessions
- **Encourage** input from all participants
- **Present** summaries at Forum

# Experimental Tasks and Discussion Leaders



## **ET1. Ohmic Heating Optimization**

Ron Bell (PPPL), Steve Sabbagh (Columbia University)

## **ET2. High Harmonic Fast Wave**

Randy Wilson (PPPL), Dave Swain (ORNL)

## **ET3. Coaxial Helicity Injection**

Roger Raman (University of Washington), Dennis Mueller (PPPL)

# Suggested Content of Experimental Task (ET) Reports



- **Characterize and quantify scientific goals** for the Experimental Task during Phase I, accounting for the special ST plasma features
- Recommend Experimental Runs to achieve these goals, covering
  - Scientific justification and anticipated results
  - Plasma operating conditions
  - Required measurements
  - Required device and H&CD capabilities
- Recommend priority and estimate required experimental run-days
- Appendix: input synopses, etc.

# Working Groups and Leaders



## **WG1. Inductive and CHI Startup Physics**

Roger Raman (U. Washington), Dave Gates (PPPL)

## **WG2. RF and NBI Heating and Current Drive Physics**

Dave Swain (ORNL), Dick Majeski (PPPL)

## **WG3. Magnetics and MHD Stability Physics**

J. Manickam (PPPL), Steve Sabbagh (Columbia U)

## **WG4. Transport and Fluctuations Physics**

Ed Synakowski (PPPL), Chuck Greenfield (GA)

## **WG5. Divertor, Scrape-Off Layer, Power and Particle Handling Physics**

Rajesh Maingi (ORNL), Daren Stotler (PPPL)

## **WG6. Enabling and Crosscutting Diagnostics and Tools**

Dave Johnson (PPPL), Fred Levinton (FT&P)

# Suggested Content of Updates to Working Group (WG) Reports



- **Articulate scientific opportunities** for research topics during Phase II, accounting for the special ST plasma properties
- Recommend research elements to achieve these goals, covering
  - Anticipated scientific results
  - Desired plasma operating conditions
  - Desired measurements
  - New high-leverage diagnostic and analysis ideas
- Recommend priority or schedule for these elements of research
- Appendix: input synopses, etc.

# Agenda Highlights



## January 12, Tuesday (8:30)

- Plenary I, NSTX Status and Overall Plans  
(Program, Facility, Experimental Operation, Physics Analysis)
- Plenary II, Collaborating Research Tasks
- Plenary III, Plans for Parallel ET and WG Sessions, Run Coordination

**Evening:** Forum Reception Dinner

## January 13, Wednesday (8:00)

- Parallel I, Three ET Sessions (Ohmic optimization, HHFW, CHI Startup)
- Parallel II, Six WG Sessions on FY00-01 Enhanced Research Elements

## January 14, Thursday (8:00)

- Plenary IV & V, ET and WG Summaries
- Recommendations, Actions, Plans

**Afternoon:** Tour of NSTX Facility (1:20 – 2:15)

Team Meeting (2:30 – 5:30)



**Welcome to the NSTX Research Team!**

**Thanks for your participation and insight!**