



Proposal and Attendance Form for NSTX Research Forum 2001

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Please write in the boxes below a one-page abstract of your proposal to be presented:

Title: Infrared imaging of plasma facing surfaces, heat load reduction development

Abstract:

As both the pulse length and heating power are increased in NSTX so will be the heat load to the plasma facing components. We propose to implement an infrared imaging system to measure the surface temperatures of the divertor region, center stack, and limiters (antenna and beam dump) and develop methods to reduce the heat load to these surfaces. These methods include: detachment, radiative mantles, and strike point sweeping. In addition we can access fast ion losses physics while imaging the surfaces where ripple loss zones are located.

In principle, although subject to possible changes if better options are found later on, we will use an infrared video camera sensitive in the 3-5 micron band, with 12-bit dynamic range, enabling detection of temperatures from room temperature on up in excess of 1500° C. Depending on available funds the camera we use will operate at a standard (fixed) 60 field/second video rate or able to operate at a maximum (partial) frame rate of 1400 fps (full frame rate of 120 fps). Short re-entrant ZnSe periscopes will be implemented to transport the views of the plasma facing surfaces to the camera. This hardware system is similar to the one we have implemented and use at Alcator C-Mod.

<p>Choose only one topical session by inserting X for each proposal (Use separate forms for separate proposals)</p>	<p><u>2000 Results</u> (mbell@pppl.gov) <u>& 2001 Research Program</u> (esynakowski@pppl.gov) (Please submit by January 10, 2001)</p> <p><input type="checkbox"/> ET1: Macroscopic Stability <input type="checkbox"/> ET2: Transport & Turbulence <input type="checkbox"/> ET3: High Harmonic Fast Wave & Electron Bernstein Wave <input type="checkbox"/> ET4: Coaxial Helicity Injection <input type="checkbox"/> ET5: Boundary Physics</p> <p><u>2002-2005 Research Opportunities</u> (mpeng@pppl.gov) (Please submit by January 11, 2001)</p> <p><input type="checkbox"/> TG1: Noninductive Startup <input type="checkbox"/> TG2: Heating, Current Drive & Fueling <input type="checkbox"/> TG3: Macroscopic Stability <input type="checkbox"/> TG4: Transport & Turbulence <input type="checkbox"/> TG5: Energetic Particle Physics <input checked="" type="checkbox"/> TG6: Multiphase Interface (Boundary Physics) <input type="checkbox"/> TG7: Plasma Science User Research</p> <p><u>Fluctuations Measurement</u> (esynakowski@pppl.gov) (Please submit by January 10, 2001)</p> <p><input type="checkbox"/> Fluctuations Measurement proposals</p>
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Select a presentation option by inserting X:

- Oral presentation in person
- Remote presentation via ShowStation and speakerphone
- Ask discussion leader to include in discussion
- No need to present, but include in meeting summaries
- Attend Forum only

Special Requests for your proposal (projector type, time constraints, etc.):

After R. Maqueda presentation on “Fast visible imaging of edge plasmas for wall condition studies”, same Session.

Please return this document via e-mail attachment to jrobinson@pppl.gov, jsavino@pppl.gov, and the corresponding organizer listed above. Please e-mail questions or comments to the organizers listed above.