



Proposal Submission for NSTX Research Forum 2001

Title	CHI at Low Toroidal Field
First Name and Initial(s)	Michael J.
Last Name	Schaffer
Email address	Schaffer@fusion.gat.com
Mailing address	PO Box 85608, San Diego, CA 92186
Phone number	858 455 2841
Institution	General Atomics
Co-authors	
Choose only one topical session by inserting X (Please use separate forms for individual proposals)	2001 Research Program (mbell@pppl.gov) <input type="checkbox"/> ET1: Macroscopic Stability <input type="checkbox"/> ET2: Transport & Turbulence <input type="checkbox"/> ET3: High Harmonic Fast Wave & Electron Bernstein Wave <input checked="" type="checkbox"/> ET4: Coaxial Helicity Injection <input type="checkbox"/> ET5: Boundary Physics 2002-2005 Research Opportunities (mpeng@pppl.gov) <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 type="checkbox"/> TG6: Multiphase Interface <input type="checkbox"/> TG7: Plasma Science User Research Fluctuations Measurement (esynakowski@pppl.gov) <input type="checkbox"/> Fluctuations Measurement proposals

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.):

none

Please write a one-page description of your presentation:

CHI at low toroidal field:

A major question in CHI is how to ensure that plasma current relaxes into a nominally closed-line magnetic configuration. Available data from smaller CHI experiments suggests that $n=1$ MHD activity plays a vital role. If so, the characteristic plasma q must be near 1. Combining the $q=1$ condition with a simple model for the critical λ for plasma expulsion from the injector yields a requirement that the injector-magnetizing PF coil current must be about as large as the TF coil current. In practice, this means that B_t



must be small. Whether or not this is operationally feasible during CHI on NSTX, it is important to test CHI to low toroidal field.

I propose that CHI be studied as B_t is reduced successively to as low as operationally possible. A first attempt of this experiment would require one experimental day.

Please return this document via e-mail attachment to jrobinson@pppl.gov and jsavino@pppl.gov.

Please e-mail questions or comments to the organizers listed above.