

# General Atomics Plans for Continued Participation in CHI Research for NSTX

---



**M.J. Schaffer, L.L. Lao**  
*General Atomics, San Diego, CA, U.S.A.*

**NSTX 5 Year Plan Ideas Forum**  
**PPPL (Presented remotely from GA)**  
**2002 June 24 - 26**

# CHI Questions to Address (One Viewpoint)



- **Is there (at least in an average sense) a central region of closed magnetic surfaces by the end of a CHI non inductive startup pulse?**
  - **Needed to confine energetic HHFW electrons.**
- **How does CHI operate in STs to distribute plasma current on the closed surfaces?**
  - **Is this scalable to larger devices and stronger B?**

# General Atomics Will Continue with CHI Research at NSTX



- **Integrate EFIT with Proposed  $\Delta B_T$  Sensors**
  - $\Delta B_T$  data across CHI electrode radius will impose experimental  $J_{\text{INJECTED}}$  source profile and greatly improve MHD equilibrium fits during CHI.
  - Recommend that this diagnostic + modeling improvement be completed early in FY 04–08 period, to support CHI and noninductive operation goals.
- **Study Physics of Magnetic Helicity and CHI Current Drive**
  - Extend theory of helicity transport and associated current drive.
  - Help plan magnetic and electrostatic CHI probes for UCSD scanning probe.
  - Analyze and interpret data to identify the CHI current drive physics.
- **NSTX CHI System**
  - Help evaluate CHI performance of new (2002) absorber.
  - Contribute to plasma control concepts for CHI.
  - Contribute to new CHI hardware conceptual design, as appropriate.