



## 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: Direct Waveguide Coupling to the EBW in Low Field Devices**

**Abstract:** Calculations of direct coupling to the Electron Bernstein Wave (EBW) using a single waveguide in the X-mode orientation are presented. The idea is to insert the mouth of the waveguide all the way in to the neighborhood of the upper hybrid resonance, which for the low magnetic field of machines like NSTX, CDX-U, and other STs occurs at very low density, on the order of several  $10^{11} \text{ cm}^{-3}$ . Despite the extremely short wavelength of the EBW (on the order of the electron gyroradius) in the coupling region, we predict that low reflection coefficients can be obtained without dielectric filling of the waveguide or other unusual techniques. Analytic calculations using simplified density profiles are compared with full-wave computations performed with the GLOSI code. From a basic wave physics point of view, this problem is interesting in that the mode conversion layer can occur in the antenna near fields, hence the physics of the mode conversion should have a direct influence on the easily observable coupling properties.

<p>Choose only one topical session by inserting X for each proposal (Use separate forms for separate proposals)</p>	<p><b><u>2000 Results</u></b> (<a href="mailto:mbell@pppl.gov">mbell@pppl.gov</a>)  <b><u>&amp; 2001 Research Program</u></b> (<a href="mailto:esynakowski@pppl.gov">esynakowski@pppl.gov</a>)          (Please submit by January 10, 2001)</p> <p><input type="checkbox"/> ET1: Macroscopic Stability  <input type="checkbox"/> ET2: Transport &amp; Turbulence  <input type="checkbox"/> X_ET3: High Harmonic Fast Wave &amp; Electron Bernstein Wave  <input type="checkbox"/> ET4: Coaxial Helicity Injection  <input type="checkbox"/> ET5: Boundary Physics</p> <p><b><u>2002-2005 Research Opportunities</u></b> (<a href="mailto:mpeng@pppl.gov">mpeng@pppl.gov</a>)          (Please submit by January 11, 2001)</p> <p><input type="checkbox"/> TG1: Noninductive Startup  <input type="checkbox"/> TG2: Heating, Current Drive &amp; Fueling  <input type="checkbox"/> TG3: Macroscopic Stability  <input type="checkbox"/> TG4: Transport &amp; Turbulence  <input type="checkbox"/> TG5: Energetic Particle Physics  <input type="checkbox"/> TG6: Multiphase Interface (Boundary Physics)</p> <p><b><u>Fluctuations Measurement</u></b> (<a href="mailto:esynakowski@pppl.gov">esynakowski@pppl.gov</a>)          (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 (in person or with remote access)

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

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