Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Proof-of-principle measurements using the 300 GHz collective scattering diagnostic ROBERT HARDIN, West Virginia University, WILLIAM PRZYBYSZ, JUSTIN ELLIS, EARL SCIME — Experiments designed to provide a proof-of-principle measurement with the WVU 300 GHz collective scattering diagnostic continue. The collective scattering system, capable of measuring wave-numbers ranging from 62 to 89 cm^{-1}, is operated in conjunction with a new electrostatic double probe (with a measureable wave-number range up to $\sim$50 cm^{-1}). To directly excite finite $k_\perp$ electrostatic waves propagating perpendicular to the magnetic field that can be detected with this diagnostic, an internal antenna designed to launch electrostatic ion-cyclotron waves has been built and installed in HELIX. For the magnetic field strength of HELIX, the wave dispersion of such waves is essentially that of an ion-acoustic wave. Wave number measurements for naturally occurring and externally driven waves, using both the scattering system and electrostatic double probe, are presented.

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Date submitted: 17 Jul 2008 Electronic form version 1.4