Non-inductive Electron Cyclotron Heating and Current Drive with Dual Frequency (8.2 /28 GHz) Waves in QUEST

【EX/P4-50】H. Idei *et. al.*

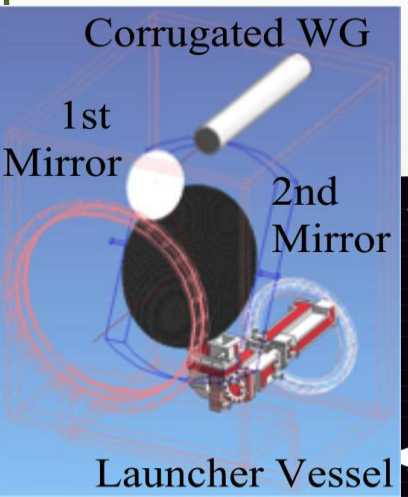
By means of dual 8.2 GHz and 28 GHz waves, over dense 25 kA plasma with central high energetic-electron pressure was non-inductively built up and sustained for 0.4 s by 8.2 GHz EBWH effect.

Bulk electron temperature or pressure increased in the over dense region where was the 1st Doppler-shifted resonant for large $N_{//}$.

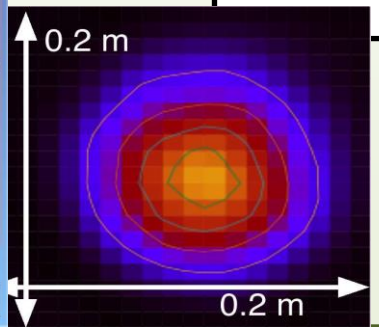
Current density and pressure profiles for the equilibrium analyzed by EFIT were center-peaked, and the HX intensities with more than 200 keV were observed in the central over dense region due to the 8.2 GHz EBWH effect.

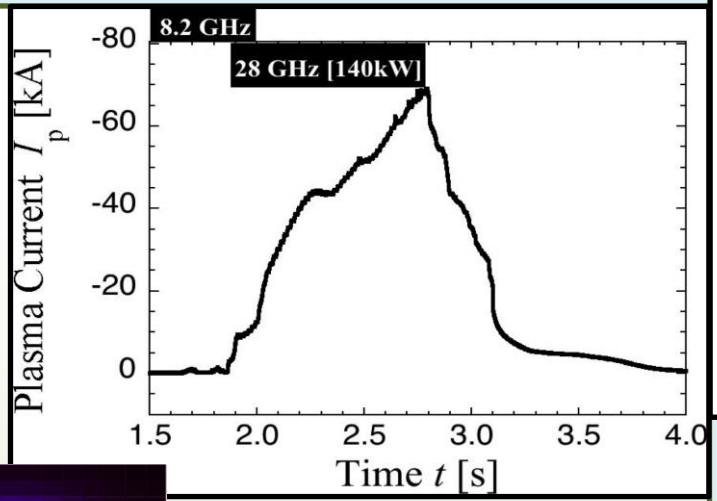
Local ECHCD Non-inductive Plasma Startup

Launcher



Focused beam (cold test)





High non-inductive plasma current of 70 kA has been attained using a new 28 GHz launcher and polarizer system.