



IAEA FEC 2016

Contribution ID: 491

Type: Poster

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

Wednesday, 19 October 2016 14:00 (4h 45m)

By means of dual 8.2 GHz and 28 GHz waves, the over dense 25 kA plasma with central high energetic-electron pressure was non-inductively built up and sustained for 0.4 s by Electron Bernstein Wave Heating (EBWH) effect between 8.2 GHz fundamental and 2nd harmonic Electron Cyclotron (EC) layers. Spontaneous Density Jumps (SDJs) have been clearly observed at a few times in a shot, and the electron density became over dense for the 8.2 GHz injection. The bulk electron temperature or pressure increased in the over dense region being fundamentally Doppler-shifted resonant with the parallel refractive index $N_{\parallel} > 4$ for the 8.2 GHz injection. Current-carrying energetic electrons with more than 200 keV were remarkably observed in the over dense region due to the 8.2 GHz EBWH effect.

Paper Number

EX/P4-50

Country or International Organization

Japan

Primary author: Dr IDEI, Hiroshi (Research Institute for Applied Mechanics, Kyushu University)

Co-authors: Ms HIGSASHIJIMA, Aki (Kyushu University); Dr EJIRI, Akira (Graduate School of Frontier Sciences, The University of Tokyo); Prof. FUKUYAMA, Atsushi (Kyoto University); ZUSHI, Hideki (Riam Kyushu University); Mr NAKASHIMA, Hisatoshi (Kyushu University); Prof. HANADA, Kazuaki (Advanced Fusion Research Center, Research Institute for Applied Mechanics, Kyushu University); Prof. NAKAMURA, Kazuo (Kyushu University); Dr HASEGAWA, Makoto (Kyushu University); Dr WATANABE, Osamu (Kyushu University); Mr KAWASAKI, Shoji (Kyushu University); Dr ONCHI, Takumi (Kyushu University); Prof. IMAI, Tsuyoshi (Plasma Research Center, University of Tsukuba); Dr KARIYA, Tsuyoshi (Plasma Research Center, University of Tsukuba); Prof. TAKASE, Yuichi (University of Tokyo); Mr MISHRA, kishore (Kyushu University)

Presenter: Dr IDEI, Hiroshi (Research Institute for Applied Mechanics, Kyushu University)

Session Classification: Poster 4

Track Classification: EXW - Magnetic Confinement Experiments: Wave-plasma interactions; current drive; heating; energetic particles