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**Survey of the OXB mode conversion window using fast scanning O-mode radiation in the LHD** YUKI GOTO, Nagoya Univ, SHIN KUBO, Nagoya Univ, National Institute for Fusion Science, HIROE IGAMI, TAKASHI SHIMOZUM, YASUO YOSHIMURA, HIROMI TAKAHASHI, TOHRU TUJIMURA, RYOHHEI MAKINO, National Institute for Fusion Science — ECRH using an Electron Bernstein Wave (EBW) is an effective method for the heating of the over-dense plasma. The EBW can be excited via the ordinary(O)-extraordinary(X)-EBW(B) (OXB) mode conversion process with launching the O-mode from the low field side toward the OXB mode conversion window, that is, the scope of injection direction to get high OXB mode conversion rate. In the Large Helical Device (LHD), EBW heating experiments using the OXB mode conversion process have been carried out. For improving the heating performance and the experimental efficiency, it is essential to tune the injection direction precisely to aim the OXB mode conversion window experimentally. Since a thermally excited EBW in the plasma core region can be emitted as the O-mode via the inverse OXB mode conversion mechanism, we have tried to find out the window by measuring the O-mode emission intensity using a fast steerable antenna. The increase of radiation intensity near this region is confirmed experimentally when an over-dence plasma is sustained. A ray-tracing code is extended to simulate the ECE including the emission originated from the EBW (EBE) to understand the observed change in the radiation using experimentally obtained plasma profiles for each time slice during the antenna steering.

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