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ECRH launching scenario in FFHR-d1 KOTA YANAGIHARA, Nagoya Univ, SHIN KUBO, Nagoya Univ, National institute for fusion science, TAKASHI SHIMOZUMA, YASUO YOSHIMURA, HIROE IGAMI, HIROMI TAKAHASHI, TOHRU TSUJIMURA, RYOHHEI MAKINO, National institute for fusion science — ECRH is promising as a principal heating system in a prototype helical reactor FFHR-d1 where the heating power of 80 MW is required to bring the plasma parameter to break even condition. To generate the plasma and bring it to ignition condition in FFHR-d1, it is effective to heat the under/over-dense plasma with normal ECRH or Electron Bernstein Wave (EBW). Normal ECRH is well established but heating via EBW need sophisticated injection control. EBW can be excited via the O(ordinary)-X(extraordinary)-B(EBW) mode conversion process by launching the ordinary wave from the low field side to plasma cut-off layer with optimum injection angle, and the range of injection angle to get high OXB mode conversion rate is called OXB mode conversion window. Since the window position can change as the plasma parameter, it is necessary to optimize the injection angle so as to aim the window in response to the plasma parameters. Candidates of antenna positions are determined by optimum injection points on the plasma facing wall calculated by the injection angle. Given such picked up area, detailed analysis using ray-tracing calculations and engineering antenna design will be performed.

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