

Abstract Submitted
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Pre-ionization and plasma startup by second harmonic electron cyclotron wave for KSTAR first plasma¹ J.H. JEONG, S. PARK, W. NAMKUNG, M.H. CHO, Pohang University of Science and Technology, Pohang, Korea, Y.S. BAE, S.H. HAHN, J. KIM, M. JOUNG, H.L. YANG, National Fusion Research Institute, Daejeon, Korea, KSTAR TEAM — Second harmonic electron cyclotron heating (ECH)-assisted startup has been carried out for the fully superconducting KSTAR first plasma. The 84 GHz electron cyclotron (EC) wave, which is the second harmonic EC resonance frequency at R 1.7 m with the toroidal magnetic field of 1.5-T, is launched in the linearly polarized pure extraordinary (X2) mode from the low field side. An EC power ~ 350 kW was sufficient to obtain a reliable KSTAR first plasma with a loop voltage of 2 V (0.23V/m) at the innermost vacuum vessel wall and the hydrogen pre-fill gas pressure of 3.5×10^{-5} mbar. In this paper, the experimental results of the second harmonic ECH pre-ionization will be presented.

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