

Abstract Submitted
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Electron cyclotron heating/current-drive system using high power tubes for QUEST spherical tokamak¹ TAKUMI ONCHI, H. IDEI, M. HASEGAWA, T. NAGATA, K. KURODA, K. HANADA, Kyushu University, T. KARIYA, University of Tsukuba, S. KUBO, T.I. TSUJIMURA, S. KOBAYASHI, NIFS, QUEST TEAM — Electron cyclotron heating (ECH) is the primary method to ramp up plasma current non-inductively in QUEST spherical tokamak. A 28 GHz gyrotron is employed for short pulses, where the radio frequency (RF) power is about 300 kW. Current ramp-up efficiency of 0.5 A/W has been obtained with focused beam of the second harmonic X-mode. A quasi-optical polarizer unit has been newly installed to avoid arcing events. For steady-state tokamak operation, 8.56 GHz klystron with power of 200 kW is used as the CW-RF source. The high voltage power supply (54 kV/13 A) for the klystron has been built recently, and initial bench test of the CW-ECH system is starting. The array of insulated-gate bipolar transistor works to quickly cut off the input power for protecting the klystron.

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