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Evolution of the radial electric field in high-Te ECH heated plasmas on LHD NOVIMIR PABLANT, MANFRED BITTER, LUIS F. DELGADO APARICIO, Princeton Plasma Physics Laboratory, ANDREAS DINKLAGE, Max-Planck Institut fur Plasmaphysik, DAVID GATES, Princeton Plasma Physics Laboratory, MOTOSHI GOTO, TAKESHI IDO, National Institute for Fusion Science, KENNETH H. HILL, Princeton Plasma Physics Laboratory, SHIN KUBO, SHIGERU MORITA, KENICHI NAGAOKA, TETSUTAROU OISHI, SHINSUKE SATAKE, HIROMI TAKAHASHI, MASAYUKI YOKOYAMA, National Institute for Fusion Science, LHD EXPERIMENT GROUP TEAM — A detailed study is presented on the evolution of the radial electric field (Er) under a range of densities and injected ECH powers on the Large Helical Device (LHD). These plasmas focused on high-electron temperature ECH heated plasmas which exhibit a transition of Er from the ion-root to the electron-root when either the density is reduced or the ECH power is increased. Measurements of poloidal rotation were achieved using the X-Ray Imaging Crystal Spectrometer (XICS) and are compared with neo-classical predictions of the radial electric field using the GSRAKE and FORTEC-3D codes. This study is based on a series of experiments on LHD which used fast modulation of the gyrotrons on LHD to produce a detailed power scan with a constant power deposition profile. This is a novel application of this technique to LHD, and has provided the most detailed study to date on dependence of the radial electric field on the injected power. Detailed scans of the density at constant injected power were also made, allowing a separation of the power and density dependence.

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