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Dynamic Confinement of ITER Plasma by O-Mode Driver at Electron Cyclotron Frequency Range V. ALEXANDER STEFAN, Nikola TESLA Laboratories (Stefan University), 1010 Pearl Street, La Jolla, CA 92038-2946. — A low B-field side launched electron cyclotron O-Mode driver[1] leads to the dynamic rf confinement, in addition to rf turbulent heating, of ITER[2] plasma. The scaling law for the local energy confinement time τ_E is evaluated ($\tau_E \sim 3n_eT_e/2Q$, where (3/2) n_eT_e is the local plasma thermal energy density and Q is the local rf turbulent heating rate). The dynamics of unstable dissipative trapped particle modes (DTPM)[3,4] strongly coupled to Trivelpiece-Gould (T-G) modes is studied for gyrotron frequency 170GHz; power$\sim$24 MW CW; and on-axis B-field $\sim$ 10T. In the case of dynamic stabilization of DTPM turbulence and for the heavily damped T-G modes, the energy confinement time scales as $\tau_E \sim (I_0)^{-2}$, whereby $I_0(W/m^2)$ is the O-Mode driver irradiance.

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