

Contribution ID: 166

Type: Poster

EX/P3-10: Collisionality Dependence of Confinement in T-10 L-Mode Plasmas

Wednesday, 10 October 2012 08:30 (4 hours)

Investigation aimed at the understanding of a general origin of the thermal and particle transport has been carried out in regimes with the dominant electron heating in the T-10 tokamak. ECR heating with the power of 0.25-3 MW has been used. Two scans have been summarized for the analysis: density scan at the constant EC heating power value, (P_EC=0.9 MW, P_tot=1 MW), and recently obtained EC heating power scan at the fixed density n_e=1.8*10^19 m^-3=0.25 n_Gw. The value of the effective collisionality was changed in the range nu_eff^{*}0.1-10. For the first time it was shown that the main regularities of the energy and particle confinement do not depend of the method of collisionality modification. These features are the following: i) energy confinement time increase with collisionality and saturates at nu_eff^{*}1-2; ii) the density peaking increases with collisionality and goes to higher level at the same nu_eff value, nu_eff^{*}1-2; iii) the density profile flattening becomes stronger with collisionality increase in the ECR heated discharges in comparison with the ohmically heated discharges taken at the same collisionality.

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Session Classification: Poster: P3

Track Classification: EXC - Magnetic Confinement Experiments: Confinement