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## **PD/P8-05: Electric Potential Dynamics in OH and ECRH Plasmas in the T-10 Tokamak**

*Friday, 12 October 2012 14:00 (4h 45m)*

The new experimental observations of plasma potential by a Heavy Ion Beam Probe diagnostic and theoretical description of the formation of  $E(r)$  in the T-10 (circular tokamak,  $B(0)=1.5-2.5$  T,  $R=1.5$  m,  $a=0.3$  m) are presented. OH deuterium plasmas ( $n(e) = 0.6-4.7 \times 10^{19} \text{ m}^{-3}$ ,  $T(e) < 1$  keV,  $T(i) < 0.6$  keV) are characterized by a negative potential up to  $\phi(0) \approx -1300$  V. The potential profile is monotonically increasing towards the plasma edge. A density rise due to gas puff is accompanied by an increasing negative potential. When density approaches certain value  $n(e) = 2.5-3.5 \times 10^{19} \text{ m}^{-3}$ , this growth saturates, while the energy confinement time is still approaching its saturation level. Powerful auxiliary ECRH ( $P(\text{ECRH}) < 3$  MW) leads to  $T(e)$  increase up to 3 keV and to the decrease of the absolute potential and even change the potential sign to positive at the edge. The potential radial profiles and the dependence on  $n(e)$  and  $T(e)$  are explained by NC models in the core, while the turbulent dynamic model (Braginskij MHD) explains the edge potential.

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