

Contribution ID: 410 Type: Poster

EX/P7-24: Time-resolved Evolution of Low Frequency Electrostatic Fluctuations during Slow L-H Transition at the Boundary Plasma of HL-2A Tokamak

Friday, 12 October 2012 08:30 (4 hours)

A quasi-period electrostatic oscillation with 2-3 kHz is observed using Langmuir probe array during slow L-H transition in edge plasma of HL-2A Tokomak. This low frequency oscillation radially propagates inwards with 0.3-0.6 km/s inside the separatrix about 3-8 mm, and it appears on potential, density, electron pressure and Reynolds stress gradients. The dPe/dr fluctuation amplitude can reach 30-40%. The dRs/dr is prior to Er fluctuation about pi/2, indicating the existence of nonlinear interaction between them. In near SOL, this low frequency oscillation also appears in potentials, Er and density fluctuation, suggesting a significant correlation among them at edge and near SOL plasma. This quasi-period oscillation might be correlated with mean flow or low frequency zonal flow, and the latter might set a condition for the former developing, implying a competitive process between them. The competition characterized by a quasi-period oscillation seems to determine the L-H transition.

Country or International Organization of Primary Author

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Collaboration (if applicable, e.g., International Tokamak Physics Activities)

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Presenter: Mr CHENG, Jun (China) **Session Classification:** Poster: P7 $\label{thm:confinement} \textbf{Track Classification:} \quad \textbf{EXD - Magnetic Confinement Experiments: Plasma-material interactions; divertors; limiters; scrape-off layer (SOL)$