Contribution ID: **3228** Type: **not specified**

P2.1021 Analysis of Radial Electric Field and H-mode Transition based on Ion-Neutral Collisions

Tuesday, 9 July 2019 14:00 (2 hours)

See full abstract here
http://ocs.ciemat.es/EPS2019ABS/pdf/P2.1021.pdf

Underlying mechanisms of Bohm diffusion, E-field formation, and the suppression of turbulence have been remained unexplained for many years. The analysis of Gyro-Center Shift (GCS) is based on the ion-neutral collisions. GCS analysis provides a new perspective on how the electric fields can be generated and the particle distribution is influenced in the magnetized plasmas. GCS analysis explained not only magnetic fusion plasmas but also the phenomena in ionosphere [1]. In this presentation, definition of Reynolds number induced by ion-neutral friction and the characteristics of H-mode transitions in fusion devices including the limit cycle oscillations and the isotopes effect will be explained.
[1] Kwan Chul Lee, "Electric field formation in three different plasmas: A fusion reactor, arc discharge, and the ionosphere", Phys. Plasmas 24 112505, (2017)

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Session Classification: Poster P2

Track Classification: MCF