Contribution ID: **422** Type: **Poster**

Change of the Momentum Profiles Driven by the Sawtooth Crashes and its Effect on the LH Transition in KSTAR

Friday 17 October 2014 14:00 (4h 45m)

This paper describes the change of the rotation profiles driven by the sawtooth crashes and its effect on the LH trasition in KSTAR. After sawtooth crashes, the basic features of a slowly rising central electron temperature(Te) followed by a rapid drop in temperature have been frequently observed on many tokamaks and the rise of the central toroidal rotation and ion temperature (Ti) have been measured in KSTAR tokamak. The fluctuation of the core Ti and rotation correlated with sawtooth in Te profile from ECE in KSTAR.
The sawtooth oscillation in the Te of both core and edge region was shown and electron temperature slightly increase independent of sawtooth growth because of transition in KSTAR. The neutral beam power was insufficient to suppress sawtooth and it can trigger an L–H transition at substantially lower threshold power than what is required without sawtooth [2]. The sawtooth duration of figure 1 has been extended to double and it so called 'double sawtooth'and the double sawtooth is synchronized of LH transition on sawteeth cycle as shown in TCV. It is investigated for sawtooth to play an important role in an LH transition on KSTAR.
The heat and momentum fluxes are changed before and after the sawtooth crash during LH transition The transition enables to observe the heat and momentum fluxes changed because of the edge transport barrier as shown in figure 3. This indicates that it is important to consider the power flow to the edge plasma due to a sawtooth crash.
The sawtooth dynamics in detail was described comprehensively by 2D ECE imaging analysis during the sawtooth crash and LH transition. The sawtooth dynamics and its physics will be further investigated including the transition by assessing dependencies on q and core density profile from Thomson Scattering and fast particle population and new experimental results will be included here.

Country or International Organisation

Korea, Republic of

Paper Number

EX/P8-6

Author: Dr KO, Won-Ha (National Fusion Research Institute)

Co-authors: Prof. YUN, G.S. (Pohang University of Science and Technology); Dr LEE, H.H. (National Fusion Research Institute); Dr KWAK, J.G. (National Fusion Research Institute); Dr LEE, J.H. (National Fusion Research Institute); Dr BAK, J.K. (National Fusion Research Institute); Dr KWON, J.M. (National Fusion Research Institute); Prof. IDA, K. (National Institute for Fusion Science); Mr LEE, K.D. (National Fusion Research Institute); Prof. DIAMOND, P. (University of California San Diego); Dr YOON, S.W. (National Fusion Research Institute); Dr OH, Y.K. (National Fusion Research Institute); Dr JEON, Y.M. (National Fusion Research Institute)

Presenter: Dr KO, Won-Ha (National Fusion Research Institute)

Session Classification: Poster 8