IAEA FEC 2014

Contribution ID: **739** Type: **Poster**

An ITPA Joint Experiment to Study Runaway Electron Generation and Suppression

Friday 17 October 2014 08:30 (4 hours)

Results from an ITPA joint study of the threshold conditions for runaway electron (RE) generation suggest that suppression of RE's during disruptions on ITER could be less demanding than currently envisioned. In this study of quiescent, non-disrupting discharges, it is found that generating and maintaining measurable RE's is more difficult than predicted by collisional damping only, indicating that additional loss mechanisms may play a significant role in the dynamics of RE formation and decay. If this result also holds true during disruptions, which seems likely, then mitigation of RE's would not require fueling to the extremely high 'Rosenbluth'density.
A study to compare empirical RE threshold conditions to Connor-Hastie (C-H) is being carried out by the ITPA MHD group. In order to obtain well-documented, reproducible results, the study is concentrating on RE' s produced during quiescent, flattop conditions, when Vloop and ne can be accurately measured. RE threshold data from a number of tokamaks (DIII-D, TEXTOR, FTU, KSTAR, C-MOD, JET so far), indicate that E-fields well in excess of C-H, or conversely, densities well below C-H are required for the detection of RE's, implying that other loss mechanisms in addition to collisional drag may be playing an important role. An alternative to the threshold method, involving the characterisation of the RE growth and decay rates at different densities after the RE's have formed, also supports the finding that other loss mechanisms in addition to collisional drag are playing an important role. Clear opportunities for involvement by the theory community will be stressed, including understanding the nature of non-collisional RE energy and particle loss mechanisms, and how these would scale from the quiescent flattop conditions in this study to the disruption conditions in ITER.

Country or International Organisation

USA

Paper Number

EX/5-1

Author: Mr GRANETZ, Robert (USA)

Presenter: Mr GRANETZ, Robert (USA)

Session Classification: Poster 7