Contribution ID: **248**   Type: **Poster**

Plasma Vertical Stabilization in ITER

Wednesday 15 October 2014 08:30 (4 hours)

This paper describes the progress in analysis of the ITER plasma vertical stabilization (VS) system since its Design Review 2007 −2008. Two indices characterising plasma vertical stabilization were studied. These are 1) the maximum value of plasma vertical displacement due to free drift that can be stopped by the VS system and 2) the maximum Root Mean Square value of low frequency noise in the dZ/dt "diagnostic"signal used in the VS feedback loop. The first VS index was calculated using the PET code for 15MA high-li low-beta plasmas. The second VS index was studied in the simulations of the most demanding for plasma magnetic control 15MA scenarios having the fastest plasma current ramp-up with early X-point formation, the fastest plasma current ramp-down in divertor configuration and the H to L mode transition at the current flattop. The simulations were performed from the beginning of the central solenoid discharge till the end of plasma current ramp-down using the DINA code with feedback control of the plasma current, position and shape, taking into account engineering limits imposed on the coils, power supplies and plasma-wall gaps. The studies performed demonstrate that the VS in-vessel coils, adopted recently in the baseline design, increase of the VS controllability range by about a factor of 6 providing operating margins sufficient to achieve ITER's goals.

Country or International Organisation

ITER Organization

Paper Number

PPC/P3-21

Author: Dr GRIBOV, Yury (ITER Organization)

Co-authors: Dr KAVIN, Andrey (Joint Stock Company "D.V.Efremov Institute of Electrophysical Apparatus"); Dr SNIPES, Joseph (ITER Organization); Dr ZABEO, Luca (ITER Organization); Dr KHAYRUTDINOV, Rustam (Nuclear Fusion Institute, Russian Research Center "Kurchatov Institute"); Dr LUKASH, Victor (Nuclear Fusion Institute, Russian Research Center "Kurchatov Institute")

Presenter: Dr GRIBOV, Yury (ITER Organization)

Session Classification: Poster 3