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Mon-Af-Po1.17-06 [57]: ITER Pre Compression Ring Test Facility FEM analysis

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The Pre Compression Ring (PCR) system is a key component of ITER magnetic system that radially constraints the Toroidal Field (TF) coils against the out of plane magnetic forces. Due to its peculiar characteristics (one of a kind component, unidirectional S2 fiberglass in epoxy matrix) an experimental campaign has been planned on both reduced and full scale specimens. The tests purpose is the validation of the manufacturing technique verifying the compliance with the structural requirements. The Pre Compression Ring Test Facility (PCRTF) aims at reproducing the loading condition whom the PCR is subjected to in the tokamak assembly with a safety margin. For this purpose a detailed non linear 3D FEM model was developed permitting the simulation of the tests to be performed of the full scale PCR and on two different reduced PCR sub-assemblies. The analyses permitted to assess not only the stress field inside the specimens themeselves but also the stress, displacements and global forces for the modules of the testing rig. This led to a fine optimization of the PCRTF components also investigation several off-design scenarios that may occur during the assembly and the operation of the facility.
The views and opinions expressed herein do not necessarily reflect those of the ITER Organization

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