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First results of transient stability analysis of ITER Central Solenoid Nb3Sn CICC with JackPot-ACDC

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The performance during an operating plasma scenario of Nb3Sn Cable-in-Conduit Conductors (CICCs) designs envisaged for the ITER Central Solenoid has been analyzed with the code JackPot-ACDC. At present there is no experimental facility available to test the stability of the conductors under relevant pulsed plasma operating conditions. Only limited experimental data is existing that is suitable for more accurate quantitative analysis but the time and magnetic field amplitude scales are different from the actual ITER operating conditions. To better assess the stability margins for the ITER magnets, the computed local electric field on the strands at most severe conditions during the plasma scenario is compared with the one obtained from the single harmonic pulse test performed in the SULTAN facility. The results of the stability test with the single harmonic magnetic field pulse is scaled to the ITER plasma operating conditions by using the numerical model. The first results are presented and discussed.

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