



MT 26
International Conference
on Magnet Technology
 Vancouver, Canada | 2019

Contribution ID: 769

Type: **Poster Presentation**

Mon-Mo-Po1.05-08 [61]: Effects of Resonance Phenomenon caused by Power Supply on JT-60SA CS

Monday 23 September 2019 09:15 (2 hours)

The central solenoid (CS) of JT-60SA has four electrically independent modules, and one module is 52-layer coil combined 6 octa-pancake coils and a quad-pancake coil vertically. The CS module is supplied with current through the room temperature busbar and current feeder of the superconductor. The maximum voltage between the CS module terminals is designed to be 10 kV, the voltage between the layers under ideal conditions is then about 0.38 kV because the CS module has 52 layers. But, in operating condition, there is a possibility that the voltage between the conductors is higher than 0.38 kV due to the voltage fluctuations of the power supply and the inhomogeneous voltage distribution in the CS induced by the resonance phenomenon. Hence, it is important to investigate the voltage behavior between the conductors in the CS module.

In the previous works, the circuit simulation model was created which includes CS module (the 52-layer pancake coil), the room-temperature busbar, superconducting current feeder and the structures (ground insulation) supporting TF coil. And the influence of resonance phenomenon on voltage distribution was investigated. In this works, based on the results of the previous works, we created the circuit simulation model of the entire CS (4 modules) and estimated the voltage distribution affected by resonance phenomenon. As a result, it can be concluded that the influence of resonance phenomenon on JT-60SA CS modules is negligible small under the operating conditions. These results therefore represent important information for the safe operation of the JT-60SA.

Authors: Mr MEGURO, Hirotakaka (Sophia university); NAKAMURA, Kazuya (Sophia University); Mr SONODA, Shogo (Sophia university); Mr NASU, Keisuke (Sophia university); Dr MURAKAMI, Haruyuki (Quantum radiology Science and Technology); Dr NATSUME, Kyohei (Quantum radiology Science and Technology); Mr FUKUI, Kazuma (National Institutes for Quantum and Radiological Science and Technology); Mr ISONO, Takaaki (National Institutes for Quantum and Radiological Science and Technology)

Presenter: Mr SONODA, Shogo (Sophia university)

Session Classification: Mon-Mo-Po1.05 - Fusion I: CFETR & JT-60