Contribution ID: **470** Contribution code: **THU-PO3-206-09** Type: **Poster**

Numerical analysis on transient stability of large helical device conductor

Thursday, 18 November 2021 10:00 (20 minutes)

NbTi superconductors with large cross-sectional area of high purity aluminum are used in accelerators, SMES, and fusion devices to improve their stability. The Large Helical Device (LHD) is a Heliotron-type fusion experimental device, which consists of a pair of superconducting helical coils and three pairs of superconducting poloidal coils. The LHD conductor used for the helical coils is a composite superconductor, which consists of a NbTi/Cu Rutherford cable, a thick pure aluminum stabilizer and a copper sheath around the composite. The peculiar quench phenomena, such as traveling normal zone and asymmetrical normal zone propagation are observed in the original LHD helical coil and also in small test coils wound with the LHD conductor. In this paper, the normal zone propagation in the LHD conductor against a thermal disturbance is numerically simulated. The transient stability of the composite superconductor with aluminum is discussed.

Primary author: OHYA, MASAYOSHI (Kwansei Gakuin University)

Presenter: OHYA, MASAYOSHI (Kwansei Gakuin University)

Session Classification: THU-PO3-206 Fusion VI: JT-60SA, DTT and Other Devices