27th International Conference on Magnet Technology (MT27)
Fukuoka, Japan / 2021

Contribution ID: **630** Contribution code: **WED-PO2-723-02** Type: **Poster**

# Assembly and mechanical analysis of the Canted-Cosine-Theta subscale magnets

*Wednesday, 17 November 2021 10:30 (20 minutes)*

Stress management techniques have shown great potential to mitigate the high level of stress appearing in high field accelerator magnets, which is especially critical for stress-strain sensitive superconductors, such as Nb<sub>3</sub>Sn or HTS. The Canted-Cosine-Theta (CCT) concept provides an effective method to intercept the Lorentz forces of each turn, leading to a lower stress accumulation in the magnet's coils. In this context, the CCT subscale program, part of the U.S. Magnet Development Program (US-MDP), provides a rapid-turn-around and versatile platform for the development and proofing of technologies, and for further understanding the fundamental nature of training in stress managed magnets, which can be later applied to high field magnets.
This paper describes the general assembly process of the subscale magnets, including the layer-to-layer assembly technology, and strain gauge instrumentation. The baseline design of the magnet is shown along with all the variations in terms of structure, and impregnation materials of the coils. The training of all magnets is presented, analyzing their performance based on their mechanical response during powering, and comparing the results with finite element simulations.

This work was supported by the U.S. Department of Energy, Office of Science, Office of High Energy Physics, through the US Magnet Development Program.

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**Session Classification:** WED-PO2-723 Moel Coil II & Test Facilities