MT25 Conference 2017 - Timetable, Abstracts, Orals and Posters



Contribution ID: 440

Type: Poster Presentation of 1h45m

## Mechanical Structure for the PSI Canted-Cosine-Theta (CCT) Magnet Program

Wednesday 30 August 2017 13:15 (1h 45m)

CCT technology promises, by its intrinsic stress-management, to lower coil stresses in high-field accelerator magnets. This is especially relevant for Nb3Sn magnets, which may be subject to irreversible degradation if the coil stresses exceed critical values. The internal structure of CCT coils, however, dilutes the engineering current density. For an efficient design, the internal structure, therefore, needs to be reduced to the limit given by the CNC machining capabilities. In that case, however, the mechanical stiffness must be provided by an external structure. For the PSI CCT program, we intend to build one such mechanical structure to be used in different iterations of technology model magnets. The structure is based on the bladder and key concept. CCT-specific deviations from the prevalent bladder and key implementations will be discussed in detail in the full paper, where we will also lay out 2-D and 3-D analysis in all stages of loading, cooling, and powering of the magnet, as well as sensitivity and tolerance analyses.

## **Submitters Country**

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Session Classification: Wed-Af-Po3.11

Track Classification: G3 - Stability of Conductors and Coils