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## A Study of the Effect of a Strand Breakage on the Operating Margin of a Nb<sub>3</sub>Sn Cable

*Friday 9 October 2020 12:00 (30 minutes)*

Current and temperature distribution and re-distribution phenomena in multi-strand superconducting cables are a topic of research since the beginning of this technology, and can be of major relevance for the operating margin and performance of accelerator magnets. My work at the MSC Group at CERN is based on the problem of current distribution in a Nb<sub>3</sub>Sn Rutherford cable subjected to a local strand breakage and it is conducted by modeling the coil cable and joints by means of the THEA software (Cryosoft package).

The main aim of the study is to evaluate the effect of local strand breakages, which could be originated as an example during coils and magnets fabrication process, on the operational margin of the magnets themselves. This is to understand, ultimately, if the presence of such defects is acceptable for the use of non-conform coils in magnets, and in particular for the High-Luminosity LHC project.

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