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# Design of a full Superconducting 35 T Magnet with a 20 T REBCO Insert

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A 35 T/17 mm cold-bore full superconducting magnet has been designed. It consists of a 15 T LTS background magnet with the inner radius of 150 mm, and a 20 T HTS insert magnet with the inner radius of 17 mm. We hybrid used no-insulated and steel-insulated REBCO tapes to wind the HTS insert, with the aim of protecting part of HTS coils in a relatively safe state. Two mechanical models were built to estimate the stress distribution inside the HTS coils during operation. The influence of the screening current field on stress was discussed. A quench circuit model was built to simulate the influence of mutual inductance between the two HTS coils during quench. The 20 T insert magnet is being fabricated by ASIPP and Tsinghua University and planned to be tested in 2021. No-insulated HTS coils have been completely wound and current-capacity test results at 77 K were presented and discussed.

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