

CA program and 20 T design

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IHEP (Beijing, China) is pursuing R&D of high field accelerator magnet technology for recently proposed CEPC-SPPC project, which will need thousands of 20-T level accelerator magnets in 20 years. A long term plan has been made aiming to realize the 20-T magnets in 15 years. The conceptual design study has been ongoing from 2014 based on the current J_c level of superconductors. As both Nb₃Sn and HTS superconducting materials are strain-sensitive, the common coil configuration has been chosen as the first option for the design study of the 20-T dipoles, to simplify the coil structure, raise the bending radius and lower the strain level in superconducting coils. The magnetic analysis, mechanical analysis, preliminary design study of the straight section and the coil ends have been completed for a 20-T common coil dipole magnet. The main characteristics and challenges of this design concept and R&D steps will be discussed.

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