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## Progress of the High Field Magnet Program for SPPC

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In 2012, after the discovery of the Higgs particle by the Large Hadron Collider in Geneva, scientists in China proposed Circular Electron Positron Collider (CEPC) and Super Proton Proton Collider (SPPC), to study the physics beyond the Standard Model. SPPC needs thousands of 12~24 T accelerator magnets to bend and focus the particle beams. Novel high field magnet technology is highly expected to help reduce the cost of the project.

The iron-based superconductors (IBS), which was discovered in 2008, having a critical field over 100 T, strong current carrying capacity and much lower fabrication cost comparing with other traditional high field superconducting materials. In 2016, the world's 1st 100-m long IBS tape was successfully fabricated. In 2018, the first IBS solenoid coil was fabricated and tested at 24 T. In 2018-2019, the first IBS racetrack coils wound with 100-m long IBS tapes was fabricated and tested at up to 10 T. The works verified that IBS could be a promising candidate for the application in high field magnets.

In parallel, we are developing high field model dipoles with Nb<sub>3</sub>Sn and ReBCO technology: the 1st model dipole reached 10.7 T in two apertures at 4.2 K in 2018-2019. A novel transposed cable with ReBCO conductor is under development, and a 16 T dipole magnet is in the fabrication process. An overview of the high field magnet program for SPPC pre-study, latest progress and the future plans will be introduced.

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