Progress of the High Field Magnet R&D for CEPC-SPPC

Strong domestic collaboration in China for the advanced superconductor R&D (HTS & Nb3Sn) has started to significantly raise their performance and lower their cost. So far Jc of 100-m long 7-core Iron-Based Superconducting tape has reached 500 A/mm2 @4.2 K, 10 T, corresponding to Ic >200 A, Je>140 A/mm2. The quench current of the Iron-Based Superconducting double pancake solenoid coil reached 67 A at 30 T, new world record! Moreover, 10+ T dual-aperture model dipoles being developed at IHEP, reached 12.47 T at 4.2 K in July 2021, aiming to reach 16 T (Nb3Sn+HTS) in 3 years, and 20 T in 10 years.

The project of HL-LHC CCT magnet goes on well:the 1st series CCT magnet has passed all the performance test at 4.2 K, to be shipped to EU in October 2021. China & CERN Collaboration on accelerator technology started with HL-LHC CCT magnets, to be expanded in future.