

Progress of High Field Superconducting Magnets in China

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Abstract—High field superconducting magnets have made significant contributions to the fields, such as physics, chemistry, materials, brain science, life science, and medical health, and produced many Nobel Prize level achievements. This report presented the recent research progress of high field superconducting magnets in China, and discusses the key scientific issues and future development trends. For high field or NMR magnets, the quench protection, screening current effect, shimming, HTS-LTS joints and fabrication technology are still significant challenges that require focused research. Now, China has achieved world-leading magnetic field and is to utilize the ultra-high field superconducting magnets. For HTS and LTS hybrid magnet, the large-scale scientific facility was fabricated with 30 T high field magnets and 27 T NMR magnet. The 9.4 T/800 mm MRI LTS magnet for the whole body was developed successfully. And the 1.3 GHz NMR and 14 T MRI magnet will be developed in the next five years.

Keywords (Index Terms)—ultrahigh field superconducting magnet, NMR, MRI, HTS-LTS magnet