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C1Po1F-05 [39]: Conceptual cooling design for 14T MRI superconducting magnet system

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At present, Ultra-high field MRI system is considered the right way to explore the human brain because of the brain activity would be seen at a resolution of hundreds of micrometers. In 2017, the Chinese government launched an ambitious project to design and manufacture a 14T MRI system in object to neuroscience research in future. The superconducting magnets made of Nb₃Sn superconductor and NbTi superconductor is designed to generate a homogeneous field level of 14 T with a warm bore of 900 mm. In order to ensure the magnet could be operated in safety and stability with a higher temperature margin, the superconducting magnet system include main coil made of Nb₃Sn superconductor and shielding coils made of NbTi superconductor will be immersed and cooled by the sub-cooled helium. In this paper, the concept design of the low-temperature structural and the cryogenic system will be introduced.

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