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Superconducting Coil system R&D for a 230 MeV Superconducting Cyclotron

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Started in Jan 2015, a 230 MeV superconducting cyclotron is under construction at China Institute of Atomic Energy for proton therapy. A compact main magnet design with warm iron yokes and a superconducting coil system is adopted to reduce the size, construction and operation cost of the cyclotron. In this paper, the field calculations of the main magnet are briefly described; then the R&D of the superconducting coil system are outlined in detail, including the cryogenics design of the system, the forces and stress analysis of the superconducting coil and support links, the power supply and quench protection design; some preliminary test results are also presented.

Submitters Country

China

Authors: Dr WANG, Chuan (China Institute of Atomic Energy); Dr ZHANG, Tianjue (China Institute of Atomic Energy); Dr YIN, Meng (China Institute of Atomic Energy); Dr ZHANG, Suping (China Institute of Atomic Energy); Mr LV, Yinlong (China Institute of Atomic Energy); Mr GE, Tao (China Institute of Atomic Energy); Mr CUI, Tao (China Institute of Atomic Energy); Dr YIN, Zhiguo (China Institute of Atomic Energy)

Presenter: Dr WANG, Chuan (China Institute of Atomic Energy)

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