Contribution ID: **882** Contribution code: **THU-PO3-404-06** Type: **Poster**

Development of superconducting joints between bronze-route Nb3Sn multifilamentary wires for persistent-mode operation

Thursday, 18 November 2021 10:00 (20 minutes)

Abstract: Superconducting joints are essential for persistent-mode operation in a superconducting magnet system, the resistance has to be around 10-14-10-12 Ω thus to produce an ultra-stable magnetic field. Based on the national collaboration program of the MRI for small animals, the development of superconducting joints between bronze-route Nb3Sn multifilamentary wires manufactured by Furukawa is launched. In this paper, we report the rational design of the Nb3Sn superconducting joints in detail. To qualify the properties of the Nb3Sn superconducting joints, their critical current and resistance are examined through four-lead and current decay methods, respectively, at 4.2 K in a background magnetic field. The investigation aim to provide a feasible approach of Nb3Sn superconducting joints for the small animal MRI magnet systems.

Primary authors: Mr ZHOU, C (Institute of Plasma Physics, Chinese Academy of Sciences, Hefei 230031, China); Mr QIN, J. G (Institute of Plasma Physics, Chinese Academy of Sciences, Hefei 230031, China); Mr GAO, Peng (Institute of Plasma Physics, Chinese Academy of Sciences, Hefei 230031, China); HUANG, W. C. (Department of Electrical Engineering, Tsinghua University, Beijing 100084, China); Mr LI, X (Shenzhen institute of advanced technology, Chinese Academy of Sciences, Shenzhen 518055, China); Mr JIANG, X. H (Department of Electrical Engineering, Tsinghua University, Beijing 100084, China); Mr SHEN, Z. D (Department of Electrical Engineering, Tsinghua University, Beijing 100084, China); Mr LIU, haihong (中国科学院合肥物理研究所)

Presenters: Mr GAO, Peng (Institute of Plasma Physics, Chinese Academy of Sciences, Hefei 230031, China); Mr LIU, haihong (中国科学院合肥物理研究所)

Session Classification: THU-PO3-404 Magnets for MRI