



Contribution ID: 1923 Contribution code: TUPB051

Type: **Poster Presentation**

Development of a conduction cooling system for S-band niobium-tin superconducting RF cavities using cryocoolers

Tuesday 3 June 2025 16:00 (2 hours)

We have started research and development of a 4K niobium-tin superconducting RF (SRF) electron accelerator system for radioisotope (RI) production. The niobium-tin superconducting RF electron linac can be operated with the compact conduction cooling system without liquid helium and large-scale equipment. The cavity-cryocooler thermal link needs a careful design as its thermal conductance will control the temperatures of the cavity and the cryocooler. As the first step of our research, S-band Nb₃Sn superconducting cavities and its conduction cooling system are developed, and their performance will be demonstrated. Beam acceleration experiments using those niobium-tin superconducting cavities are planned at the test accelerator at Tohoku University. The status of the niobium-tin superconducting cavity development will be reported at this conference.

Footnotes

Paper preparation format

Word

Region represented

Asia

Funding Agency

Author: KASHIWAGI, Shigeru (Research Center for Accelerator and Radioisotope Science)

Co-authors: KAVAR, Anjali (Tohoku University); HINODE, Fujio (Tohoku University); HAMA, Hiroyuki (Tohoku University); KUDO, Kodai (Tohoku University); SHIBATA, Kotaro (Tohoku University); MUTO, Toshiya (Tohoku University); NANBU, Ken-ichi (Tohoku University); YAMADA, Tomohiro (High Energy Accelerator Research Organization); NAGASAWA, Ikurou (Tohoku University); KIKUCHI, Akihiro (National Institute for Materials Science); SHANAB, Safwan (High Energy Accelerator Research Organization); ITO, Hayato (High Energy Accelerator Research Organization); SAKAI, Hiroshi (High Energy Accelerator Research Organization); UMEMORI, Kensei (High Energy Accelerator Research Organization); TAKAHASHI, Ken (Tohoku University)

Presenter: NANBU, Ken-ichi (Tohoku University)

Session Classification: Tuesday Poster Session

Track Classification: MC8: Applications of Accelerators, and Engagement for Industry and Society:
MC8.U04 Isotope Production