



Contribution ID: 851 Contribution code: WEPS81

Type: **Poster Presentation**

Optimizing the magnetic circuit of HTSU through REBCO tape selection

Wednesday, 22 May 2024 16:00 (2 hours)

The National Synchrotron Radiation Research Center (NSRRC) has conducted a study on the magnetic circuit design of a high-temperature superconducting undulator (HTSU). This study explores the potential use of second-generation high-temperature superconducting (2G-HTS) materials in undulator magnet, which offer advantages such as higher current density and operating temperature. To evaluate the feasibility of HTSU design, a preliminary magnetic circuit analysis has been conducted. The simulation of the HTSU involved the use of several commercial 2G-HTS tapes with different widths. Insulating and non-insulating HTS tapes were compared to evaluate their effects on current density and magnetic field. Additionally, the maximum field strength on the surface of the tape was determined to establish the optimal operating temperature and current density for the HTSU. These simulation results provide valuable insights for optimizing the design and performance of the HTSU, ultimately contributing to advancements in particle accelerator technologies.

Footnotes

Funding Agency

Paper preparation format

Word

Region represented

Asia

Primary author: JAN, Jyh-Chyuan (National Synchrotron Radiation Research Center)

Co-authors: LIN, Fu-Yuan (National Synchrotron Radiation Research Center); CHU, Yun-Liang (National Synchrotron Radiation Research Center); HUANG, Jui-Che (National Synchrotron Radiation Research Center); YANG, Chin-Kang (National Synchrotron Radiation Research Center)

Presenter: YANG, Chin-Kang (National Synchrotron Radiation Research Center)

Session Classification: Wednesday Poster Session

Track Classification: MC7: Accelerator Technology and Sustainability: MC7.T10 Superconducting Magnets