Contribution ID: **441** Contribution code: **WEPS143** Type: **Poster Presentation**

Heat dissipation mechanisms of superconducting cavities

Wednesday 4 June 2025 16:00 (2 hours)

The heat dissipation mechanisms in superconducting cavities are investigated. Liquid helium is used to remove the heat generated in these cavities. The properties of liquid helium and its heat removal efficiency are discussed. When RF power is applied to a superconducting cavity, heat dissipation occurs on the surface due to the surface resistance of the niobium (Nb) before X-ray generation. After X-ray generation, heat dissipation plays an important role in electron acceleration and X-ray production. Q-slope measurements for superconducting cavities are presented as a function of the accelerating electric field, and the dissipated RF power is shown as a function of the accelerating field.

Footnotes

Paper preparation format

Word

Region represented

Asia

Funding Agency

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Session Classification: Wednesday Poster Session

Track Classification: MC7: Accelerator Technology and Sustainability: MC7.T07 Superconducting RF