

Analysis of Field Emission Characteristics in Superconducting Cavities

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Field emission is one of the limitations of the performance of accelerating cavities, especially for superconducting cavities. Reducing electron loading caused by field emission electrons is one of the most important tasks in constructing a superconducting accelerator. Identifying the location of the field emission site can be helpful in this process. In the mass production step of superconducting cavities, it is impossible to install diagnostic equipment, such as X-ray mapping systems and temperature mapping systems. A power meter and a single X-ray detector were mainly used to measure the performance of the superconducting cavities. In this study, an idea for estimating the position of the field emission site is proposed. Using the obtained quality factors, field enhancement factors and onset accelerating fields of field emission were obtained for 33 cavities. From this information, changes in the location of the primary field emission site were confirmed during the field emission conditioning process.

Paper submission Plan

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Best Presentation

Yes

Contribution track

ICABU WG1. Accelerator Systems

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