

Smartcell X-band normal conducting accelerator structure prototype fabrication

Thursday 29 August 2024 16:00 (2 hours)

This presentation details the design and fabrication process of a prototype of a normal-conducting X-band accelerator structure, which we denominate Smartcell. These structures, achieved through brazing/bonding techniques, are crucial components for future linear colliders.

We will cover the brazing/bonding geometry, materials selection and their implications, variations in heat cycles, and atmospheres employed during brazing/bonding. Additionally, the impact of copper quality and annealing procedures implemented before, during, and after machining will be discussed specifically within the context of normal-conducting structures. This includes exploring how variations in copper quality and the timing and/or temperature of annealing treatments can influence the machinability, microstructure, and ultimately the performance of the final component.

The presentation will showcase the behavior of five mock-ups, including the results and conclusions obtained through optical examination, metrology, and SEM analysis. We will also discuss silicon carbide RF properties and characterization throughout the fabrication process.

Footnotes

Funding Agency

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