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Fabrication of seamless single-cell copper elliptical cavities through bulk-machining

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In the context of future accelerator studies, niobium coating of copper-based cavities plays a key role in achieving an optimal balance between radio-frequency performance and cost-effectiveness.

Recent advancements have focused on the development of bulk-machined elliptical cavities, featuring a seamless, weld-free equator. By optimizing the design of machining tools, the machining strategy and processing parameters, Fabrication of high-quality cavities with excellent shape accuracy and surface finish has been achieved, along with improved repeatability.

This contribution presents the current status of fabrication for such seamless cavities, including the design of the specialized cutting tools. It also explores the relationship between cutting tool parameters, machining conditions and surface integrity, providing a deeper insight into the factors that may influence the future success of niobium coatings.

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Yes

Footnotes

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