A Review of the Cavity Material Removal Techniques being Applied to Superconducting RF Cavities

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Abstract

The current list of techniques which are available for preparing a satisfactory internal surface for superconducting RF (SRF) cavities has matured significantly in the past 5 years. Two techniques have been demonstrated on large scale projects, and a third technique is showing promise as a more environmentally friendly option. This paper will review the merits of three different techniques, centrifugal barrel polishing (CBP), buffered chemical polishing (BCP) and electropolishing (EP) as they pertain to different cavity geometries, operating frequencies and required operational gradient. In addition, the time required for the various processes will be reviewed and comments made on the suitability of these processes for SRF cavities that may be used for a proton linac suitable for an Accelerator Driven System.