

Pushing the Limits of RF Superconductivity Workshop

Abstract Submission Form for Contributed Talks

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Session: (choose one)

Ultimate Field Limits, New Materials, New Geometries

High Q, Field Emission, Q-Slopes

Future Research Paths to Ultimate Performance

ABSTRACT:

Title: New SRF cavity geometry for high-current applications

CW applications at high-current, such as Energy-Recovery Linacs (ERL) call for new cavity designs, optimized for High-Order Mode (HOM) damping. We report the design of a 703.75 MHz 5-cell elliptical $\beta=1$ cavity which is specifically designed for very high current (over one ampere average current) applications. The cavity is characterized by large iris apertures, 17 cm in diameter, and large beam tube diameter of 24 cm. All HOMs couple well out of the cavity into the beam pipe, where they will be damped by ferrite absorbers. This design has been pioneered for a single cell cavity for the Cornell 500 MHz storage-ring. The 5-cell cavity is the first one designed specifically for ERL applications. The cavity and cryomodule are being manufactured by Advanced Energy Systems. The work is a collaboration of BNL, AES and Jefferson Laboratory.