Pushing the Limits of RF Superconductivity Workshop

Abstract Submission Form for Contributed Talks

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Session: (choose one)

X Ultimate Field Limits, New Materials, New Geometries

___ High Q, Field Emission, Q-Slopes

___ Future Research Paths to Ultimate Performance

ABSTRACT:

Title: Reentrant Cavity and First Test Result

A new geometry is being explored at Cornell University. The reentrant shape offers a reduced ratio of Hpk/Eacc. Since breakdown of superconductivity imposed by magnetic field is a physical limit, this new geometry has the potential to reach a higher Eacc. Several reentrant shapes at 1300 MHz have been optimized, among which one was chosen to be evaluated experimentally. An accelerating gradient of 44 – 45 MV/m was achieved at a peak surface magnetic field of 1700 Oe. As the RF magnetic field limit of niobium is beyond 1700 Oe, further improvement in Eacc can be anticipated. Efforts are continuing to push the accelerating gradient of reentrant cavities into the regime of 50 MV/m.