Pushing the Limits of RF Superconductivity Workshop

Abstract Submission Form for Contributed Talks

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Session: 1—Ultimate Field Limits, New Materials, New Geometries

ABSTRACT:

Title: Niobium Copper Clad Cavities

Activities of DESY, KEK and JLab in development of NbCu clad cavities will be presented. Fabrication of NbCu clad cavities by seam less technique gives to bimetallic option a new opportunity. On one hand it allows to save a lot of Nb, what has a special significance for large projects like ILC. On the other hand the Nb layer possess microstructure and properties of a bulk Nb, what allows applying of the most treatment procedures developed for bulk Nb (BCP, EP, annealing at 800°C, bake out at 150°C, HPR, HPP etc.) In addition the cavity stiffness can be easily increased by increasing of the thickness of Cu layer. High thermal conductivity of Cu helps for cavity thermal stabilization.
Big potential of NbCu option is proven on single cell 1.3 GHz cavities. The best NbCu clad cavity performance is the same as of the best bulk Nb cavities. Eacc of ca. 40 MV/m was achieved. Bimetallic tubes were fabricated by hot bonding or explosive bonding. Single cell cavities were fabricated by hydroforming technique.