



Contribution ID: 164

Type: **Remote Parallel Session**

Recent SRF Activities at CEA Saclay

Tuesday, 16 May 2023 11:00 (15 minutes)

Today, Superconducting Radio Frequency technology is based on bulk niobium and is now reaching its intrinsic limitation. Increasing the performance of SRF cavities while reducing manufacturing and operating costs poses real technological challenges. At CEA, we pursue a multiscale material functionalization approach compatible with mass production without performance degradation. The first scale is the development of bulk cavity material with optimization of vertical electropolishing. Gradient over 50MV/m on 1300MHz single cell and above 40MV/m on 704MHz single cell cavities have been achieved. The second scale aims at exploring the growth of superconducting films and multilayers as well as thermal treatments to go beyond performance of bulk niobium. Finally we will discuss the challenges to maintain the achieved performances with updated clean-room procedures with the development of a robot, presently used for the cleaning of some flanges during the ESS cryomodule assembly. The latest lab activities will be presented.

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Session Classification: Accelerator: Superconducting RF

Track Classification: Accelerator: Superconducting RF