TTC 2020

Tuesday, 4 February 2020 - Friday, 7 February 2020

CERN

Scientific Programme

Please make your talk proposals to the working group conveners, which are mentioned below.
WG-1: Progress on High-Q and high-G

Conveners: Marc Wenskat (DESY), Ari Palczewski (JLAB), Kensei Umemori (KEK)
Charge: The scope of this working group is to discuss the most recent results related to pushing niobium towards higher Q and higher gradient. Advances in understanding material evolution under established but also newly developed heat treatments, such as N-Infusion, N-Doping, Low-T Bake and Mid-T Bake, the differences and advantages of low-temperature EP compared with conventional EP, and current results on flux-expulsion studies should be discussed. The interplay between theoretical approaches and experiments should be emphasized. Results from sample and cavity studies (different cavity types and frequencies) which could help to establish a core understanding should be included. Is there a single reason or mechanism for the Q improvement? Independent of the chosen heat treatments? Or are we using different knobs to impact the material? Is the evolution of the surface understood or do we miss something?
WG-2: Couplers and auxiliaries

Conveners: Eric Montesinos (CERN), Naruhiko Sakamoto (RIKEN), Sang Hoon Kim (FRIB)
Charge: Superconducting accelerator modules require more than just cavities. The goal of this working group is to exchange knowledge and ideas related to recent developments in the field of fundamental power and HOM couplers, including feedthroughs. Frequency tuners, usually operated at cold, are required also. What are the most recent designs? High Q cavities, discussed in WG-1, require sufficient magnetic hygiene; this holds not only for testing condition but also in the real accelerator environment. Recent developments should be reported.
WG-3: Coating techniques thin films and new materials

Conveners: Tobias Junginger (University of Victoria/TRIUMF), Guillaume Rosaz (CERN), Teng Tan (IMP)
Charge: The SRF community is pushing the limits of bulk niobium. Thin films of Nb on Cu may offer an alternative to bulk niobium for certain applications to reduce costs of the cavities and/or cryomodules while still achieving high performance. New materials like Nb3Sn and MgB2 with higher Tc and Hsh are being developed to allow operation at higher temperatures and/or enhanced gradient. Thin films of complex multi-layers over bulk-Nb are also being pursued as a way to push bulk Nb to reach higher peak fields. These new films/materials are being pursued through advanced coating techniques with quality determined through sample study and/or cavity characterization. Samples can be characterized with DC methods or with characterization in custom built rf resonators. Recent developments, new methods, lessons learned and progress should be reported.
WG-4: New techniques for fabrication of SRF components & CM assembly and design

Conveners: Hiroshi Sakai (KEK), Stephane Berry (CEA), Tug Arkan (FNAL)
Charge: Standard cavity manufacture involves forming or machining RRR Nb parts and then electron beam welding them into subassemblies to be then EB welded into final assemblies. Cryomodule assembly is done in a clean room with well trained technicians following accepted protocols. New fabrication methods are being pursued to improve the cost and or quality of cavities or cavity parts including laser welding, internal welding, hydroforming, electro-hydroforming, electro-deposition of Cu to make seamless cavities and 3-D printing. Cavity processing, cavity string assembly or cryomodule assembly may benefit in terms of quality and reproducibility, especially for mass production, through the incorporation of robotic techniques. Finally new cryomodules that are being developed for industrial applications are providing an alternative to helium refrigerators by incorporating cryocoolers and conduction cooling. Recent developments in non-standard fabrication, design and assembly concepts should be reported.
Hot Topic: Processing and testing of large elliptical cavities (<1 GHz) for hadron linacs

Conveners: Grigory Eremeev (FNAL), Paolo Pierini (ESS), Sha Peng (IHEP)
Charge: Several upcoming accelerator projects (ESS, PIP-II, SNS upgrade, FRIB upgrade, eRHIC/JLEIC, FCC, CEPC, …) utilize multi-cell elliptical cavities operating at sub-GHz frequencies and medium accelerating gradients. While the community strives to reach the “golden standard” of 1.3-GHz cavities, there are still several technological challenges remaining, from design to the cavity performance in an accelerator. The hot topic discussion should concentrate on these challenges, among which are: cavity design (high Lorentz Force Detuning, helium vessel integration, …); fabrication and handling due to size/weight; processing to achieve high Q and FE-free cavities; challenges during bare and dressed cavity testing; etc. It is important for the community to start collecting and analyze data and develop performance indicators.