

TTC 2020



Report of Contributions

Contribution ID: 1

Type: **not specified**

CERN overview and SRF activities

Tuesday 4 February 2020 09:30 (30 minutes)

Presenter: GERIGK, Frank (CERN)

Session Classification: Plenary

Contribution ID: 2

Type: **not specified**

High-Q/High-G TTC task force report

Tuesday 4 February 2020 10:00 (30 minutes)

Presenter: MARTINELLO, Martina (Fermilab - IIT)

Session Classification: Plenary

Contribution ID: 3

Type: **not specified**

Statistical Analyses of Nitrogen-Doped Cavity Production for LCLS-II Cavities

Wednesday 5 February 2020 09:00 (30 minutes)

Presenter: GONNELLA, Dan (SLAC)

Session Classification: Plenary

Contribution ID: 4

Type: **not specified**

Spiral 2 SRF commissioning

Wednesday 5 February 2020 09:30 (30 minutes)

Presenter: FERDINAND, Robin (GANIL)

Session Classification: Plenary

Contribution ID: 5

Type: **not specified**

Workshop Report from ERL2019 at HZB

Wednesday 5 February 2020 10:00 (30 minutes)

Presenter: MCINTOSH, Peter

Session Classification: Plenary

Contribution ID: 6

Type: **not specified**

Progress on SRF technology in China

Thursday 6 February 2020 14:00 (30 minutes)

Presenter: TAN, Teng (IMP)

Session Classification: Plenary

Contribution ID: 7

Type: **not specified**

Technical challenges for Korean SC Heavy Ion Accelerator

Thursday 6 February 2020 14:30 (30 minutes)

Presenter: KWON, Myeum (RISP)

Session Classification: Plenary

Contribution ID: 8

Type: **not specified**

Indian SRF contribution for FNAL PIP-II project

Thursday 6 February 2020 15:00 (30 minutes)

Presenter: SHRIVASTAVA, Purushottam (RRCAT)

Session Classification: Plenary

Contribution ID: 9

Type: **not specified**

Nuclear Reactions Studies with Radioactive Ion Beams at HIE-ISOLDE

Friday 7 February 2020 09:00 (45 minutes)

Presenter: NEYENS, Gerda (CERN)

Session Classification: Plenary

Contribution ID: **10**

Type: **not specified**

Physics and technology overview of LBNF DUNE

Friday 7 February 2020 09:45 (45 minutes)

Presenter: TUFANLI, Serhan (CERN)

Session Classification: Plenary

Contribution ID: **11**

Type: **not specified**

WG1 Report

Friday 7 February 2020 11:00 (15 minutes)

Presenters: PALCZEWSKI, Ari (Thomas Jefferson National Accelerator Facility); UMEMORI, Kensei (KEK); WENSKAT, Marc (Deutsches Elektronen-Synchrotron DESY)

Session Classification: Plenary

Contribution ID: 12

Type: **not specified**

WG2 Report

Friday 7 February 2020 11:15 (15 minutes)

Presenters: MONTESINOS, Eric (CERN); SAKAMOTO, Naruhiko (RIKEN); KIM, Sang Hoon (FRIB)

Session Classification: Plenary

Contribution ID: 13

Type: **not specified**

WG3 Report

Friday 7 February 2020 11:30 (15 minutes)

Presenters: ROSAZ, Guillaume Jonathan (CERN); TAN, Teng (IMP); JUNGINGER, Tobias (University of Victoria/TRIUMF)

Session Classification: Plenary

Contribution ID: 14

Type: **not specified**

WG4 Report

Friday 7 February 2020 11:45 (15 minutes)

Presenters: SAKAI, Hiroshi (KEK); BERRY, Stéphane (CEA-Saclay); ARKAN, Tug (FNAL)

Session Classification: Plenary

Contribution ID: 15

Type: **not specified**

Technical Board Report

Friday 7 February 2020 12:00 (15 minutes)

Presenter: KAKO, Eiji (KEK)

Session Classification: Plenary

Contribution ID: 16

Type: **not specified**

Chairman's Report

Friday 7 February 2020 12:15 (15 minutes)

Presenter: WEISE, Hans (DESY)

Session Classification: Plenary

Contribution ID: 17

Type: **not specified**

Closing Remarks

Friday 7 February 2020 12:30 (15 minutes)

Session Classification: Plenary

Contribution ID: **18**

Type: **not specified**

CERN welcome and logistics

Tuesday 4 February 2020 09:00 (15 minutes)

Presenters: GERIGK, Frank (CERN); CALATRONI, Sergio (CERN)

Session Classification: Plenary

Contribution ID: 19

Type: **not specified**

Introduction and update from last collaboration meeting

Tuesday 4 February 2020 09:15 (15 minutes)

Presenter: WEISE, Hans (DESY)

Session Classification: Plenary

Contribution ID: 20

Type: **not specified**

New results of KEK infusion and mid-T bake

Tuesday 4 February 2020 11:00 (15 minutes)

Presenter: UMEMORI, Kensei (KEK)

Session Classification: Working Group Session

Contribution ID: 21

Type: **not specified**

Update on insitu mid-T bake

Tuesday 4 February 2020 11:15 (15 minutes)

Presenter: POSEN, Sam (FNAL)

Session Classification: Working Group Session

Contribution ID: 22

Type: **not specified**

Recent SRF cavity treatment R&D @ DESY

Tuesday 4 February 2020 11:30 (15 minutes)

Presenter: STEDER, Lea (DESY)

Session Classification: Working Group Session

Contribution ID: 23

Type: **not specified**

High Q&G activity at IHEP

Tuesday 4 February 2020 11:45 (15 minutes)

Presenter: DONG, Chao (IHEP)

Session Classification: Working Group Session

Contribution ID: 24

Type: **not specified**

Status of infusion studies at IJCLab/CEA-Saclay

Tuesday 4 February 2020 12:00 (15 minutes)

Presenter: LONGUEVERGNE, David (IPNO)

Session Classification: Working Group Session

Contribution ID: 25

Type: **not specified**

Status of infusion studies at JLab

Tuesday 4 February 2020 12:15 (15 minutes)

Presenter: DHAKAL, Pashupati (Jefferson Lab)

Session Classification: Working Group Session

Contribution ID: 26

Type: **not specified**

Progress in N doping at FNAL –new developments in higher gradients insights

Tuesday 4 February 2020 14:00 (18 minutes)

Presenter: BAFIA, Daniel (Fermi National Accelerator Laboratory)

Session Classification: Working Group Session

Contribution ID: 27

Type: **not specified**

LCLS-II investigation of failed LCLS-II HE prototype cavities EP analysis

Tuesday 4 February 2020 14:18 (18 minutes)

Presenter: Dr CHECCHIN, Mattia (FNAL)

Session Classification: Working Group Session

Contribution ID: 28

Type: **not specified**

Test results from the TRIUMF multi-mode coaxial resonators

Tuesday 4 February 2020 14:36 (18 minutes)

Presenter: KOLB, Philipp (TRIUMF)

Session Classification: Working Group Session

Contribution ID: 29

Type: **not specified**

New low-T sample studies highlighting the important role of oxygen diffusion

Tuesday 4 February 2020 14:54 (24 minutes)

Presenter: ROMANENKO, Alexander (Fermilab)

Session Classification: Working Group Session

Contribution ID: **30**

Type: **not specified**

Sample Survey - Presentation

Tuesday 4 February 2020 15:18 (12 minutes)

Session Classification: Working Group Session

Contribution ID: 31

Type: **not specified**

Sample Survey - Discussion

Tuesday 4 February 2020 16:00 (18 minutes)

Session Classification: Working Group Session

Contribution ID: 32

Type: **not specified**

New insights on the SRF Nb cavities performance from spectroscopic data. An XPS study

Tuesday 4 February 2020 16:18 (18 minutes)

Presenter: CANO, Arely (FNAL)

Session Classification: Working Group Session

Contribution ID: 33

Type: **not specified**

In-Situ EXAFS Investigation of N2 treatment of Nb

Tuesday 4 February 2020 16:36 (18 minutes)

Presenter: LÜTZENKIRCHEN-HECHT, Dirk (U Wuppertal)

Session Classification: Working Group Session

Contribution ID: 34

Type: **not specified**

The challenges of fully calibrated SIMS measurements using ion implant standards

Tuesday 4 February 2020 16:54 (18 minutes)

Presenter: ANGLE, Jonny (Jlab/Virginia Tech)

Session Classification: Working Group Session

Contribution ID: 35

Type: **not specified**

Sample Studies on Nitrogen- and Heat-Treatments of Niobium

Tuesday 4 February 2020 17:12 (18 minutes)

Presenter: WENSKAT, Marc (Deutsches Elektronen-Synchrotron DESY)

Session Classification: Working Group Session

Contribution ID: 36

Type: **not specified**

Flux expulsion measurement with a flux lens

Wednesday 5 February 2020 11:00 (18 minutes)

Presenter: IVANOV, Anton Evgeniev (CERN)

Session Classification: Working Group Session

Contribution ID: 37

Type: **not specified**

Metallurgical approach to addressing the issue of flux-trapping in Nb cavities and the variability found when using Nb sheet from different sources

Wednesday 5 February 2020 11:18 (18 minutes)

Presenter: BALACHANDRAN, Shreyas (NATIONAL HIGH MAGNETIC FIELD LAB)

Session Classification: Working Group Session

Contribution ID: 38

Type: **not specified**

Comparison for the vortex penetration and dynamics in Nb, Nb/N and NbTi plates

Wednesday 5 February 2020 11:36 (18 minutes)

Presenters: DONG, Chao (IHEP); WEN, Haihu (Nanjing U)

Session Classification: Working Group Session

Contribution ID: 39

Type: **not specified**

Flux expulsion on small samples for LCLS-II HE

Wednesday 5 February 2020 11:54 (18 minutes)

Presenter: KULYAVTSEV, Paulina

Session Classification: Working Group Session

Contribution ID: 40

Type: **not specified**

Material studies on High-T Doping

Wednesday 5 February 2020 12:12 (18 minutes)

Presenter: MAJOR, Marton (TUDA)

Session Classification: Working Group Session

Contribution ID: 41

Type: **not specified**

Development of coating system for the Wide Open Waveguide (WOW) Crab Cavity (10⁷+8')

Wednesday 5 February 2020 14:00 (18 minutes)

Presenter: AVINO, Fabio (CERN)

Session Classification: Working Group Session

Contribution ID: 42

Type: **not specified**

Progresses on ECR plasma deposited Nb thin films (10'+8')

Wednesday 5 February 2020 14:18 (18 minutes)

Presenter: VALENTE-FELICIANO, Anne-Marie (Jefferson Lab)

Session Classification: Working Group Session

Contribution ID: 43

Type: **not specified**

Legnaro Thick films (10'+8')

Wednesday 5 February 2020 14:36 (18 minutes)

Presenter: PIRA, Cristian (LNL-INFN)

Session Classification: Working Group Session

Contribution ID: 44

Type: **not specified**

Test results of re-built LHC spare cavities (10'+8')

Wednesday 5 February 2020 14:54 (18 minutes)

Presenter: Mr PEAUGER, Franck (CERN)

Session Classification: Working Group Session

Contribution ID: 45

Type: **not specified**

ARIES WP15 progresses (10'+8')

Wednesday 5 February 2020 15:12 (18 minutes)

Presenter: KUGELER, Oliver Julius

Session Classification: Working Group Session

Contribution ID: 46

Type: **not specified**

Overview Multilayers RF results (10'+8')

Wednesday 5 February 2020 16:18 (18 minutes)

Presenter: KECKERT, Sebastian (Helmholtz-Zentrum Berlin)

Session Classification: Working Group Session

Contribution ID: 47

Type: **not specified**

Recent SIS layer results (10'+8')

Wednesday 5 February 2020 16:00 (18 minutes)

Presenter: ANTOINE, Claire (CEA)

Session Classification: Working Group Session

Contribution ID: 48

Type: **not specified**

Nb₃Sn/V₃Si results (10'+8')

Wednesday 5 February 2020 16:36 (18 minutes)

Presenter: FERNANDEZ, Stephanie (CERN)

Session Classification: Working Group Session

Contribution ID: 49

Type: **not specified**

Two-stage coating of MgB₂ system (10'+8')

Wednesday 5 February 2020 16:54 (18 minutes)

Presenter: SAKAI, Hiroshi (KEK)

Session Classification: Working Group Session

Contribution ID: 50

Type: **not specified**

CVD Thick Nb film and cavity coating (10'+8')

Wednesday 5 February 2020 17:12 (18 minutes)

Presenter: SUN, Zeming (Cornell)

Session Classification: Working Group Session

Contribution ID: 51

Type: **not specified**

Nb₃Sn progressess from Cornell (10'+8')

Thursday 6 February 2020 09:00 (18 minutes)

Presenter: PORTER, Ryan (CLASSE)

Session Classification: Working Group Session

Contribution ID: 52

Type: **not specified**

Nb3Sn coated 1.5 GHz multi-cell cavities and perspectives for beam acceleration tests (10'+8')

Thursday 6 February 2020 09:18 (18 minutes)

Presenter: EREMEEV, Grigory (FNAL)

Session Classification: Working Group Session

Contribution ID: 53

Type: **not specified**

Advances in Nb₃Sn coating at Fermilab including recent world-record performance cavity results (10'+8')

Thursday 6 February 2020 09:36 (18 minutes)

Presenter: Mr POSEN, Sam (FNAL)

Session Classification: Working Group Session

Contribution ID: 54

Type: **not specified**

Nb₃Sn from the lab to the machine (10'+8')

Thursday 6 February 2020 10:12 (18 minutes)

Presenter: CALAGA, Rama (CERN)

Session Classification: Working Group Session

Contribution ID: 55

Type: **not specified**

Nb₃Sn thin film synthesized via bronze route (10'+8')

Thursday 6 February 2020 09:54 (18 minutes)

Presenter: KIKUCHI, Akihiro (National Institute for Materials Science)

Session Classification: Working Group Session

Contribution ID: 56

Type: **not specified**

HIPIMS from QPR to 1.3GHz cavities (10'+8')

Thursday 6 February 2020 11:00 (18 minutes)

Presenter: VEGA CID, Lorena (Centro de Investigaciones Energéticas Medioambientales y Tecnol)

Session Classification: Working Group Session

Contribution ID: 57

Type: **not specified**

Predicting SRF Performance using muSR and betaNMR (10'+8')

Thursday 6 February 2020 11:18 (18 minutes)

Presenter: THOENG, Edward

Session Classification: Working Group Session

Contribution ID: 58

Type: **not specified**

RF local magnetometry (10'+8')

Thursday 6 February 2020 11:36 (18 minutes)

Presenter: ANLAGE, Steven (UMD)

Session Classification: Working Group Session

Contribution ID: 59

Type: **not specified**

Predicting SRF performance PCT (10'+8')

Thursday 6 February 2020 11:54 (18 minutes)

Presenter: PROSLIER, Thomas (CEA)

Session Classification: Working Group Session

Contribution ID: **60**

Type: **not specified**

Local magnetometry (10'+8')

Thursday 6 February 2020 12:12 (18 minutes)

Presenter: TURNER, Daniel (Cockroft)

Session Classification: Working Group Session

Contribution ID: 61

Type: **not specified**

Fundamental studies for power coupler in KEK (10'+8')

Tuesday 4 February 2020 11:00 (18 minutes)

Abstract:

KEK is concentrating on studies of copper plating and ceramic from 2016. Recently, in study of copper plating, it became clear that copper-sulfate is much better than copper-pyrophosphate by analysis of RRR and grain size for each. On the other hand, KEK constructed measurement system of secondary electron emission for ceramic, and have been measured many samples provided from five vendors including TiN and Cr₂O₃ coating. In this talk, these results will be presented, and discussed.

Provocative topic:

Copper plating by sulfate and pyrophosphate, secondary electron emission of ceramic incl. coating

Presenter: YAMAMOTO, Yasuchika (KEK)

Session Classification: Working Group Session

Contribution ID: 62

Type: **not specified**

R&D Toward a 500 kW CW High Power Coupler with Variable Q_{ext} (10'+8')

Tuesday 4 February 2020 11:18 (18 minutes)

Abstract:

The SRF cavities for the electron storage ring of an Electron-Ion Collider (EIC) to be built at BNL require CW high power couplers with variable Q_{ext} . The approach taken to develop this coupler was to leverage an existing 500 kW CW fixed coupler design, and implement the coupling adjustment by means of a waveguide tuner section adjacent to the coupler. This talk will briefly present the R&D approach and progress to date including design choices, fabrication and results of the initial high power testing of the couplers which were recently completed, and plans of high power couplers for BNL EIC applications.

Provocative Topics:

High power coupler adjustment via waveguide tuner with a fixed coupler; challenging performance requirements for the BNL EIC electron storage ring SRF system; high power test results with lessons learned and plan moving forward.

Presenter: XU, Wencan

Session Classification: Working Group Session

Contribution ID: 63

Type: **not specified**

Qext studies for the 1.5 GHz BESSY VSR couplers (10'+8')

Tuesday 4 February 2020 11:36 (18 minutes)

Abstract:

The 1.5 GHz couplers for the high-current CW variable pulse-length demonstrator in BESSY II, are now out in the process of being manufactured. These couplers are designed to provide variable coupling, with the initial design brief that their Qext range was from 6×10^6 to 6×10^7 . Through the process of design development it was found that a full order of magnitude range could not be reached. In this talk, the reason behind the reduced range is discussed and studies are presented detailing how the final coupling range was chosen. Since the couplers do not exist on their own but as part of a larger system, the external effects on the Qext as a result of mechanical constraints in the module will also be presented, to show how the full system is interlinked.

Provocative topics:

That is an interesting term. Essentially, how mechanical constraints from the overall SRF system, have more effect on the design than the RF, however I am not sure whether that is provocative or new to anyone who designs couplers.

Presenter: SHARPLES, Emmy

Session Classification: Working Group Session

Contribution ID: 64

Type: **not specified**

Our experiences and troubles on FPCs for RIKEN QWR (10'+8')

Tuesday 4 February 2020 11:54 (18 minutes)

Abstract:

In RIKEN, ten QWRs and ten FPCs were produced.

The rinsings and RF processes for ten FPCs seemed to have finished without any trouble.

Three CMs were assembled and installed on the beam line.

After about two months of evacuation of CMs, a leakage from vacuum window broke out at one of the FPCs.

Because a basal treatment is difficult, we evacuate the FPC from air side of the window to perform excitation test of QWRs.

The effects of leakage on other QWRs in same CM are being examined.

A cause of leakage is unspecified for now.

Presenter: OZEKI, Kazutaka (RIKEN)

Session Classification: Working Group Session

Contribution ID: 65

Type: **not specified**

Special design considerations of high power input couplers for TEM-type superconducting cavities (10'+8')

*Tuesday 4 February 2020 12:12 (18 minutes)***Abstract:**

High power input couplers of TEM-type superconducting cavities (QWR, HWR, Spoke) usually locate at the cavity body instead of beam pipe, which requests special design considerations in addition to the conventional design criteria. Firstly, the ceramic window may be damaged by field emission (FE) induced electrons. Thus it's important to ensure no FE electrons can arrive at the ceramic surface by either optimizing the window position or blocking the electrons with specially designed shielding. Secondly, the cavity field will leak into the coupler and cause excessive heating, which may result in substantial dynamic heat load, even cavity quench. Therefore dedicated rf-thermal simulation should be done to reduce the filed leakage by optimizing the coupler position and the height of the coupler port. In addition, compact design to realize clean assembly and to minimize the contamination will be discussed.

Presenter: HUANG, Tongming (IHEP)**Session Classification:** Working Group Session

Contribution ID: 66

Type: **not specified**

Update on FPC progress at DESY (10'+8')

Tuesday 4 February 2020 14:00 (18 minutes)

ABSTRACT

A Fundamental Power Coupler (FPC) is one of the key subsystems of the SRF accelerator and does need to be addressed in same way, as the SRF cavities are. Currently most of the FPCs for the SRF cavities at DESY are installed in the Eu-XFEL linac (~800), but this is not the only application. The FLASH linac will undergo the update soon and CW operation of an SRF accelerator is under study. We plan also a refresh of our SRF testing facility with a new FPC test-stand. All these topics will be presented in short and discussed.

Provocative topics:

1. CW module test - how far can a standart E-XFEL module be used with CW operation - limits/problems
2. Coupler test for FPC intended for CW operation - is it needed ? lower voltages with higher DF...

Presenter: KOSTIN, Denis (DESY)

Session Classification: Working Group Session

Contribution ID: 67

Type: **not specified**

Experience with FPCs for the LCLS-II project at JLAB (10'+8')

Tuesday 4 February 2020 14:18 (18 minutes)

Abstract:

The LCLS II project make use of state of the art superconducting cryo-modules RF powered in CW mode by dedicated TTF3 style FPCs. The talk will provide details related with LCLS-II cryo-module production experience at JLAB using this type of couplers.

Provocative topic:

The modified TTF3 is a complex coupler, I wished it was simpler. Will this coupler demonstrate similar performances as we had on power couplers sustaining operation on LEP, LHC or SNS machines?

Presenter: STIRBET, Mircea (Jefferson Laboratory)

Session Classification: Working Group Session

Contribution ID: 68

Type: **not specified**

Test bench conditioning of the ESS couplers for elliptical cavities (10'+8')

Tuesday 4 February 2020 14:36 (18 minutes)

Abstract:

After a short presentation of the architecture and features of the ESS couplers used with elliptical cavities, we will present how we perform the conditioning of the couplers at CEA Saclay and the different diagnostic elements used to check the correct working of the couplers. We will discuss on the consequences of a "bad" TiN coating on the coupler performances during the conditioning.

Provocative topics:

Do we install too many diagnostic elements on the couplers during the conditioning?

Presenter: ARCAMBAL, Christian (CEA)

Session Classification: Working Group Session

Contribution ID: 69

Type: **not specified**

High power testing of ESS FPCs on the elliptical cavities cryomodules (10'+8')

Tuesday 4 February 2020 14:54 (18 minutes)

Abstract:

We discuss the behavior of the 1.2 MW power couplers on the ESS medium beta elliptical cavities cryomodule during high power test in the Saclay test bunker. We go through three test conditions, room temperature, cold with detuned cavity and with the nominal case of tuned cavities at 2 Kelvin.

Provocative topic:

Do we condition FPC enough?

Presenter: DEVANZ, Guillaume (CEA)

Session Classification: Working Group Session

Contribution ID: 70

Type: **not specified**

Technical Issues on RF power coupler for QWR and HWR cavity in RISP (10' + 8')

Tuesday 4 February 2020 15:12 (18 minutes)

Abstract

RF power couplers for QWR and HWR cavity are under the mass production in RISP. We will present the technical issues which occurred during the preparation and test of the RF power couplers. The contamination of the coupler is occurred after the ultra-sonic cleaning (USC) with the DI-water. The USC procedure of the coupler is modified as replacing the DI-water to the ethanol. The material for metallization of ceramic window, which is AgCu alloy (Ag-50% Cu-50%), could be oxidized by the DI-water. And the surface of the outer conductor is contaminated after the USC procedure. Substitute the ethanol for the DI-water, the contamination of ceramic window is not observed after the USC procedure. Also, the decay time measured from the RF power coupler has non-linearity when the RF power switched off. This non-linearity of decay time is only observed in horizontal test. The non-linearity of decay time makes the decay time longer than the linear decay time, and the loaded Q is also increased. The linear part of the decay time, which is a few hundreds of micro-second after the RF power switched off, is used for calculation of the loaded Q.

Provocative topics:

The high pressure rinse procedure is necessary for clean room preparation of RF power coupler?

The reason of the non-linearity in the measured decay time

Presenter: LEE, Sangbeen (Institute for Basic Science)

Session Classification: Working Group Session

Contribution ID: 71

Type: **not specified**

R&D Toward High Power Warm SiC Beam Line HOM Absorbers (10' + 8')

Tuesday 4 February 2020 16:00 (18 minutes)

Abstract:

The SRF cavities for the electron storage ring of an Electron-Ion Collider (EIC) to be built at BNL are planned to operate continuous wave (CW) with beam currents ranging from 0.26 to 2.5A and energies from 5 to 18 GeV. Strong High Order Mode (HOM) damping is necessary to maintain beam stability. Our approach is to use Silicone Carbide (SiC) as a lossy dielectric located in the room-temperature beamlines adjacent to the SRF cavities to absorb the HOM power. Simulations predict up to 80 kW of CW HOM power per cavity during operation. This talk will briefly present plans and analysis to extract the HOM power from the SiC material into a water-cooled section of beampipe along with progress to date on the prototype fabrication of the Beam Line Absorbers (BLAs). Plans for low power and high power testing will also be presented.

Provocative Topics:

Beampipe vs waveguide or coaxial HOM coupling, very high HOM power absorbers, SRF cavity contamination from SiC particulate.

Presenter: HOLMES, Doug (BNL)

Session Classification: Working Group Session

Contribution ID: 72

Type: **not specified**

HOM couplers for crab cavities and challenges (10'+8')

*Tuesday 4 February 2020 16:18 (18 minutes)***Abstract:**

Two types of crab cavities will be installed into the LHC as part of the HL-LHC project. To mitigate the problems of large beam-induced heat-loads and instabilities, the higher order modes in both cavities are damped by coaxial couplers. This presentation will detail the HOM damping mechanisms chosen, specifically looking into broad-band damping and limitations with dynamic heat loads. Finally, design constraints arising from manufacture and transport are presented with key points for discussion.

Provocative topics:

High power SC HOM couplers, gasket heat loads, transport of HOM couplers, manufacture of HOM couplers.

Presenter: MITCHELL, James Alexander (CERN)**Session Classification:** Working Group Session

Contribution ID: 73

Type: **not specified**

Newest Piezo-Actuators for High Dynamic Rate Operation (10'+8')

Tuesday 4 February 2020 16:36 (18 minutes)

Abstract:

To compensate for SRF cavity Lorentz Force Detuning fast/piezo actuator must operate at high amplitude and high dynamic rate. The piezo-actuator when operated inside insulate vacuum environment with pulses of large amplitude could be overheated quickly. Uncontrollable increase of the piezo actuator temperature could lead to the failure of the actuator, as reported in many papers.

Removing heat from piezo-ceramic when it is operated inside insulate vacuum environment complicated task that newer addressed previously. FNAL and PI team developed newest high dynamic rate (HDR) piezo-ceramic actuator that has unique way to remove heat from piezo.

Design of the newest actuator-actuators and preliminary test results will be presented.

This new HDR piezo-actuators could significantly increase reliability of the fast tuners for compensation of Lorentz Force detuning in the SRF Linacs that operated in RF-pulse mode.

Provocative topic:

What is reliability/ longevity of the piezo-tuners that deployed in recent SRF linacs?

What are the reasons that practically every modern SRF accelerator system that built recently has piezo-tuners?

But not many facility is running piezo-actuators 24/7 ?

Low reliability of the piezo? And the risk that piezo-stack could fail prevent it from actively operate fast/piezo tuners for High Dynamic Rate operation?

Presenter: PISCHALNIKOV, Yuriy (FERMILAB)

Session Classification: Working Group Session

Contribution ID: 74

Type: **not specified**

Compact tuner designed to minimize the intervals of QWRs for RIKEN heavy-ion linac (10'+8')

Tuesday 4 February 2020 16:54 (18 minutes)

Abstract:

The superconducting booster linac at RIKEN (SRILAC) has ten 73-MHz quarter-wavelength resonators (QWRs) that are contained in three cryomodules (CMs).

Focusing element of quadrupole magnets at room temperature were installed between CMs. In order to obtain optimum beam dynamics, an intervals of QWRs was set as small as 110 mm. Frequency tuning during cold operation is performed by compressing the beam port of the cavity and decreasing the length of each beam gap using a dynamic tuner. The tuning range of the cavity itself is from 0 to -14 kHz. The tuner is used to tune by a few kHz at the beginning of the cavity excitation, and by a few Hz for a long term operation in order to compensate the frequency change by helium pressure.

Since the intervals of QWRs is small, a compact design of the dynamic tuner was adopted. The support plates were welded to the helium jacket, and surrounding wires were attached.

A cavity frequency is decreased by tightening the wires, which is driven by a stepping motor and gears (ratio is 1:64).

In a cooling test at 4K, each cavity was successfully tuned to the design frequency by the tuner, in which the required frequency change was 3 kHz to 8 kHz depending on the cavity.

There is a hysteresis of around 10 Hz, which is caused by a backlash of the mechanical system.

The sensitivity of helium pressure was estimated to be $df/dp = -1.91 \text{ Hz/hPa}$ by a 3D EM calculation. In a short term (in periods of 2–3 minutes), helium pressure is stable by around 4 hPa (8 Hz) against the bandwidth of 50 Hz. Long term stability test (1 day) is underway.

If the frequency is not stable enough, an automatic frequency tuning will be necessary.

The tuner design and test results with cold cavities will be presented.

Provocative topics:

Compact tuner for QWR, minimal interval of QWR

Performance test of tuner

Presenter: SUDA, Kenji (RIKEN)

Session Classification: Working Group Session

Contribution ID: 75

Type: **not specified**

Resonance control with pneumatic slow frequency tuners for FRIB > half-wave resonators (10' + 8')

Tuesday 4 February 2020 17:12 (18 minutes)

Provocative topics:

Mechanical modes integrated with a pneumatic tuner, magnetic hygiene with a pneumatic tuner, use of 'industrial-class' proportional solenoid valves for large-scale SRF accelerators

Presenters: POPIELARSKI, John (FRIB); KIM, Sang Hoon (FRIB)

Session Classification: Working Group Session

Contribution ID: 76

Type: **not specified**

Power Couplers - Technology, manufacturing, and four ways to procure for half the price (15' + 8')

Wednesday 5 February 2020 11:00 (23 minutes)

Abstract:

Power couplers provide the vacuum and thermal interface between the superconducting cavity and the room temperature waveguide components, and transmit microwave power. The production of Power Couplers require a unique set of manufacturing processes. Procurement costs can vary widely for a number of reasons. This paper will show the critical technologies required and the breakdown of major components of cost.

Provocative topic:

Four methods to procure couplers for half the price will be discussed, along with recommendations for cost savings from a manufacturers perspective.

Presenter: EINARSON, Steve (CPII)

Session Classification: Working Group Session

Contribution ID: 77

Type: **not specified**

THALES experience for EU-XFEL project –From the (non)pre-industrialization phase to mass production (15'+8')

Wednesday 5 February 2020 11:23 (23 minutes)

Abstract:

In July 2010, THALES Electron Devices (now THALES Avionics France SAS) in consortium with Research Instrument has been awarded by CNRS/IN2P3 for the mass production of 670 RF couplers at 1.3GHz for the EU-XFEL project in Hamburg. This positive outcome has been the result of a long journey started in 2004 by several steps of consultation and discussions between the laboratories acting as design authorities / in-kind contributors to the project and the Industry.

Provocative topic:

In this talk, we will summarize the pre-tendering discussions and the aborted industrialization phase seen from THALES stand point and the consequences during project successful execution from 2010 till 2015.

Presenter: BETHUYS, Stephane (THALES)

Session Classification: Working Group Session

Contribution ID: 78

Type: **not specified**

Development of fundamental power couplers for several years at CETD (15' + 8')

Wednesday 5 February 2020 11:46 (23 minutes)

Abstract:

CETD (former company name: TETD) has developed and manufactured FPCs since more than 30 years ago in collaboration with KEK or other research institutes.

Recent years we succeeded in contract with overseas customers and we made efforts to solve various problems in order to satisfy customers requirements.

In this talk, our products developed in last few years will be introduced and some proposals and requests from the supply side will be presented.

Presenter: IRIKURA, Masao (CANON)

Session Classification: Working Group Session

Contribution ID: 79

Type: **not specified**

Remarks on the industrial production of FPC (15' + 8')

Wednesday 5 February 2020 12:09 (21 minutes)

Abstract:

The talk will address the positive and negative experiences that RI gained during the production of FPC in large scale series (E-XFEL, LCLS-II) and small scale projects. The most critical processes and head-aches will be reflected from “behind the scenes”.

The specifications do often cut the edge of achievable copper plating, TIN deposition and mechanical tolerances in a serial production and sometimes seem to be overshooting. The current development from pulsed to CW machines does raise the question, if the TTF-III coupler as a design baseline is still up to date.

Provocative topics:

Overtight copper plating specifications

TIN deposition control (nanometers!)

Specified mechanical tolerances

Is the TTF-III coupler still up to date?

Presenter: TROMPETTER, Daniel (RI Research Instruments GmbH)

Session Classification: Working Group Session

Contribution ID: **80**

Type: **not specified**

Seamless cavities via electrodeposition

Wednesday 5 February 2020 14:00 (15 minutes)

Presenter: LAIN AMADOR, Lucia (CERN)

Session Classification: Working Group Session

Contribution ID: **81**

Type: **not specified**

Developments of Niobium atomize powder for superconducting

Wednesday 5 February 2020 14:15 (15 minutes)

Presenter: DOHMAE, Takeshi (KEK)

Session Classification: Working Group Session

Contribution ID: 82

Type: **not specified**

Metal Additive Manufacturing at CERN in general and SRF Niobium

Wednesday 5 February 2020 14:30 (15 minutes)

Presenter: GERARD, Romain

Session Classification: Working Group Session

Contribution ID: 83

Type: **not specified**

Electron beam welding for cavity production, collaboration with KEK on internal welding of 1.3GHz type cavities

Wednesday 5 February 2020 14:45 (15 minutes)

Presenter: Oving, Peter (TECHMETA Company)

Session Classification: Working Group Session

Contribution ID: **84**

Type: **not specified**

Novel Technologies applied to SRF (cavity) fabrication

Wednesday 5 February 2020 15:00 (15 minutes)

Presenter: ATIEH, Said (CERN)

Session Classification: Working Group Session

Contribution ID: 85

Type: **not specified**

Fabrication Experience with Balloon SSR Cavity at TRIUMF

Wednesday 5 February 2020 15:15 (15 minutes)

Presenter: LAXDAL, Robert Edward

Session Classification: Working Group Session

Contribution ID: **86**

Type: **not specified**

RFD crab cavities manufacturing experience at CERN

Wednesday 5 February 2020 16:00 (15 minutes)

Presenter: GARLASCHE, Marco (CERN)

Session Classification: Working Group Session

Contribution ID: 87

Type: **not specified**

Seeking for a novel fabrication technology large-bore SRF-QWR cavity for 1-ampere class linac

Thursday 6 February 2020 12:15 (15 minutes)

Presenter: OKUNO, Hiroki (RIKEN)

Session Classification: Working Group Session

Contribution ID: **88**

Type: **not specified**

Stand-Alone Cryocooler-Based Module for the ATLAS Multi-User Upgrade

Wednesday 5 February 2020 16:30 (15 minutes)

Presenter: KELLY, Michael (ANL)

Session Classification: Working Group Session

Contribution ID: 89

Type: **not specified**

An effective thermal link for cooling cryo-magnetic systems : The Pulsating Heat Pipe (PHP)

Wednesday 5 February 2020 16:45 (15 minutes)

Presenter: Dr BAUDOUY, Bertrand (CEA Paris-Saclay)

Session Classification: Working Group Session

Contribution ID: **90**

Type: **not specified**

Developing conduction-cooled SRF cavities and first test results

Wednesday 5 February 2020 17:00 (15 minutes)

Presenter: Dr DHULEY, Ram (Fermi National Accelerator Laboratory)

Session Classification: Working Group Session

Contribution ID: 91

Type: **not specified**

Results from a multi-metallic conduction-cooled SRF single-cell cavity

Wednesday 5 February 2020 17:15 (15 minutes)

Presenter: RIMMER, Robert Alan

Session Classification: Working Group Session

Contribution ID: 92

Type: **not specified**

Measurement results of moving particles during STF cryomodule assembly under slow pumping/venting in KEK (12/20)

Thursday 6 February 2020 09:00 (15 minutes)

Presenter: SAKAI, Hiroshi (KEK)

Session Classification: Working Group Session

Contribution ID: 93

Type: **not specified**

IFMIF/QST on dust particle measurements by using "a vacuum particle counter"

Thursday 6 February 2020 09:15 (15 minutes)

Presenter: EBISAWA, Takashi (QST)

Session Classification: Working Group Session

Contribution ID: 94

Type: **not specified**

Cryomodule design, assembly and installation utilizing “KOACH” system

Thursday 6 February 2020 09:30 (15 minutes)

Presenter: YAMADA, Nari (RIKEN)

Session Classification: Working Group Session

Contribution ID: 95

Type: **not specified**

plasma processing and particulate's composition

Thursday 6 February 2020 09:45 (15 minutes)

Presenter: GIACCONE, Bianca (Fermilab)

Session Classification: Working Group Session

Contribution ID: 96

Type: **not specified**

Development of the position monitor by white light interferometer method in cryomodule at cERL

Thursday 6 February 2020 10:00 (15 minutes)

Presenter: SAKAI, Hiroshi (KEK)

Session Classification: Working Group Session

Contribution ID: 97

Type: **not specified**

Computer Vision solutions for Robot-assisted technology in SRF assembly at Fermilab

Thursday 6 February 2020 10:15 (15 minutes)

Presenter: ZORZETTI, Silvia (FNAL)

Session Classification: Working Group Session

Contribution ID: 98

Type: **not specified**

Robotics HPR Application for Elliptical FRIB Upgrade Cavity

Thursday 6 February 2020 11:00 (15 minutes)

Presenter: POPIELARSKI , Laura (FRIB/MSU)

Session Classification: Working Group Session

Contribution ID: 99

Type: **not specified**

Robot assisted cavity HPR and assembly at IMP

Thursday 6 February 2020 11:15 (15 minutes)

Presenters: GUO, Hao (IMP); TAN, Teng (IMP)

Session Classification: Working Group Session

Contribution ID: **100**

Type: **not specified**

Remote handling of UHV beam pipe connections in high-radiation zones

Thursday 6 February 2020 11:30 (15 minutes)

Presenter: KRZEMPEK, Lukasz Piotr (CERN)

Session Classification: Working Group Session

Contribution ID: **101**

Type: **not specified**

Robotic disk stacking for the production of RF structures

Thursday 6 February 2020 11:45 (15 minutes)

Presenter: ZENNARO, Riccardo (PSI)

Session Classification: Working Group Session

Contribution ID: **102**

Type: **not specified**

Chemical & Electropolishing facility for niobium (HL-LHC) and copper (FCC) substrates

Thursday 6 February 2020 12:00 (15 minutes)

Presenter: GERBET, Valentin

Session Classification: Working Group Session

Contribution ID: **103**

Type: **not specified**

discussion time for the session

Session Classification: Working Group Session

Contribution ID: **104**

Type: **not specified**

On-site Registration

Tuesday 4 February 2020 08:15 (45 minutes)

Contribution ID: **105**

Type: **not specified**

Methods and results of laser welding of niobium

Wednesday 5 February 2020 16:15 (15 minutes)

Presenter: BRANIGAN, Kyle (II-IV)

Session Classification: Working Group Session