



FCC RF Coordination Meeting

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March 22, 2017

news

Status of collaborations & addendums:

- FNAL: Nb₃SN , N doping
 - approved by CERN, now with FNAL
- Frankfurt University: HOM couplers for FCC_hh
 - approved
- ULAN: high efficiency klystron simulations
 - approved by ULAN

WP documents:

- WP1, WP2, WP3, WP5 up to date
- WP7: Igor
- new WP8 and WP9: low impedance CC (A. Grudiev)
- WP9, WP10 in preparation: RF quadrupole for Landau damping, fundamental power couplers

=> https://espace.cern.ch/FCC-SRF/_layouts/15/start.aspx#/

In preparation: Future directions for R&D: HE-LHC -> FCC_hh -> FCC_ee

Next meeting: 17 May 2017

Publication draft on SRF materials for FCC (Sarah et al.)

Material Options for the Superconducting RF System of the Future Circular Collider

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CERN, Geneva, Switzerland
(Dated: 15th of March 2017)

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I. Introduction on RF Requirements of FCC	1
II. SRF Material Options	1
Bulk Niobium	2
Bulk Niobium at 400 MHz	2
Bulk Niobium at 800 MHz	2
Bulk Niobium at 1.3 GHz	3

few tens of two-cell cavities. This frequency is the natural choice for the FCC-hh, which will profit from LHC as injector, and offers good perspectives for the FCC-ee low energy machines. A second operating scenario is considered for the H and $t\bar{t}$ threshold operation points where high acceleration efficiency and multi-cell cavities are required to optimize the total size of the RF system. About 2600 cells are needed to produce the total RF voltage (10 GV) of the highest energy point. Due to

FCC week

FCC week 2017

- 29 May to 2 June 2017 in Berlin

Time	Sunday	Monday (29.5)	Tuesday (30.5)				Wednesday (31.5)				Thursday (1.6)				Friday (2.6)				
08:30-09:00	Registration	WELCOME (speakers TBD)	FCC-hh machine design review Design I	Conductor Development Program 1	FCC-ee physics & experiment review Run plan and SM precision measurements	SRF Recent designs and progress	FCC-hh machine design	EuroCirCol WP5 review Electromag: Cosinetheta	FCC-hh Physics Case Basic Argumentats Review	FCC-ee machine design REVIEW		Special technologies Beam vacuum	I&O review CE, electricity, ventilation, logistics, transport	FCC-ee machine design	FCC-hh experiment review Calorimetry & trigger	Summaries Machines and Technologies	Summary FCC-hh machine design		
09:00-09:30		Physics at FCC Matthew Mc Cullough	R. Aleksan (CEA)	Convener	K. Ellis	I. Ben Zvi (BNL) or B. Rimmer (JLAB)	Convener	Convener	tbd	Convener		F. Perez (ALBA)	Ch. Prasse/K. Horstmann/G. Follett (?)/FIML	Convener	B. Heineman (DESY)		Summary FCC-ee machine design		
09:30-10:00		Opening, study status and physics perspectives																Summary I&O / Technologies	
10:00-10:30		Convener	Study status & further plans- Michael Benedikt (CERN)	Coffee Break				Coffee Break				Coffee Break				Convener	Summary Magnets / RF		
10:30-11:00			Coffee Break	FCC-hh machine design review Design II	CDP 2	FCC-ee physics & experiment review Higgs_top and flavour	SRF Materials	FCC-hh injector/machine design	EuroCirCol WP5 review Mechanics: Cosinetheta	Common experiment software	FCC-ee machine design REVIEW		Special technologies Other directions for technology R&D	16 Tesla magnet US Magnet develop. Programme	FCC-ee EPOL	FCC-hh experiment review Physics potential of FCC-hh	Coffee Break		
11:00-11:30		Status Machines	FCC-hh conceptual machine design - CDR plan and status 25/5		Other conductors: seminar													Summary FCC-he	
11:30-12:00			FCC- ee conceptual machine design - CDR plan and status 25/5	A. Faus-golfe (CNRS)	Convener	A. de Roeck	V. Palmieri (INFN LNL)	Convener	Convener	German Physicist	Convener		Convener	Convener	Convener	J. Lykken		Summary FCC-hh experiments	
12:00-12:30		Convener	HE-LHC CDR plan and status 10/5 FCC-he CDR plan and status 10/5														Summary FCC-ee experiments		
12:30-13:00			Lunch	Lunch				Lunch				Lunch				Convener	Closing remarks		
13:00-13:30			Lunch																
13:30-14:00				FCC-hh machine design review Beam performance and specifications	Conductor: Status of Nb3Sn	FCC-ee physics & experiment review Direct discovery & detectors	SRF review RF system concepts and requirements	Special technologies review FCC-hh beam handling & protection	16 Tesla Models & Technology ERMC-RMM-Wound Conductor	FCC-hh experiment review Detector requirements & concepts	FCC-ee machine design MDI REVIEW		Special technologies Other Magnets	I&O review Cryogenics	FCC-he review interation region design	Comon detector technologies	Free lunch break		
14:00-14:30		Status Technologies and Infrastructure	Special Technologies R&D - CDR plan and status 25/5																
14:30-15:00			CE, I&O CDR plan and status 25/5	G. Arduini (CERN)	Convener	L. Linssen (CERN)	D. Jamping (IHEP)	Convener	Convener	J. Incandela (UC Santa Barbara)	Convener		E. Fischer (GS/FAIR)	D. Delikaris (CERN)	O. Brüning (CERN)	Convener			
15:00-15:30		Convener	16 T Magnet R&D CDR plan and status 10/5 SRF R&D CDR plan and status 10/5	Coffee Break				Coffee Break				Coffee Break							
15:30-16:00			Coffee Break	FCC-hh machine design review Injectors	Conductor: Electromechanica I characterization	FCC-ee physics & experiment review Synergies & complementarities	SRF review Directions for R&D	Special technologies review Recent design & progress	16 Tesla magnet & circuit protection, other design options	FCC-hh experiment review Magnet & tracking	FCC-ee machine design/injector Review	COST BENEFIT ASSESSMENT WORKSHOP	I&O review Operation, reliability, safety	16 Tesla magnet review Status towards the CDR	FCC-eh: Physics	HE LHC design			
16:00-16:30	Status Experiments and Detectors	FCC-hh experiments and detector - CDR plan and status 40/5																	
16:30-17:00		FCC-ee experiments and detector - CDR plan and status 40/5	Convener	Convener	J. Ellis	S. Belomestnykh (FNAL)	Convener	Convener	N. Wermes (Uni Bonn)	Convener			LI. Mirales (CERN)	Convener	M. D'Onofrio	Convener			
17:00-17:30	Convener	FCC-he CDR plan and status 10/5					Teatime				Teatime								
17:30-18:00		Cold refreshments	Poster Session				Gender Equality working group				FCC / EuroCirCol Collaboration Boards								
18:00-18:30	Strategy Roadmaps Plenary Session	CERN roadmap and FCC - Fabiola Gianotti (CERN)					Geneviève Guinot (CERN)				Lenny Rivkin				German contributions	XFEL status and activities at DESY			
18:30-19:00		German activities towards future coll.																	

FCC week

		institute	key words/comments	title
session1	Chair: B. Rimmer (I. Ben Svi)	JLAB (BNL)		Recent designs and progress
15'+5'	Jiyuan Zhai	IHEP	ABSTRACT	RF system design for the CEPC main ring
15'+5'	S. Belomestnykh	FNAL	ABSTRACT	Update on the US decadal roadmap on SRF technology for HEP accelerators
15'+5'	S. Gorgi Zadeh	Rostock Univ	ABSTRACT	Cavity design approaches and HOM damping for FCC-ee
15'+5'	E. Palmieri	LNL		Innovative cavity fabrication techniques
10'+5'	A. Grudiev/R. Calaga	CERN	Functional requirements, WOW-CC vs HL-LHC CC	Crab cavities for FCC
session2	Chair: E. Palmieri	LNL		Materials
15'+5'	S. Posen	FNAL	ABSTRACT	Potential performance of N doping and Nb3Sn
15'+5'	A.-M. Valente	JLAB		ECR: from samples to cavities
15'+5'	E. Ilyina	CERN	ABSTRACT	Alternative materials and coating techniques for cavities
15'+5'	L. Marques Antunes Ferreira	CERN		Copper electropolishing studies for the FCC-ee SC-RF cavities
10'+5'	R. Valizadeh	STFC	to be confirmed	Surface characterization of Nb/Cu 6 GHz seamless cavities
session3 (review)	Chair: Jiyuan Zhai	IHEP		RF system concepts and requirements
15'+5'	N. Schwerg	CERN	WP1	RF scenarios and parameters layout for FCC
15'+5'	A. Butterworth	CERN	WP2 (incl. summary of functional requirements of F system)	Cavity design and beam-cavity interaction challenges
15'+5'	J. Esteban-Muller	ESS		Beam Dynamics challenges for FCC-ee
15'+5'	W. Hofle	CERN		RF feedback design and performance
session4 (review)	Chair: S. Belomestnykh	FNAL		Directions for R&D
15'+5'	S. Aull	CERN	Operating SC cavities in CW	Nb/Cu perspectives for FCC
15'+5'	I. Ben Svi (alternative B. Rimmer)	BNL (JLAB)	multipurpose CM, CM design, HOM damping schemes	Innovative cryomodule designs
15'+5'	E. Montesinos	CERN	limitations towards higher power capabilities. R&D plans	FPC challenges and perspectives for FCC
15'+5'	I. Syratchev	CERN	high efficiency power generation (400-800MHz), 0.1 - 1 MW)	Advances in high efficiency power generation
Posters:				
	J. Cai	CERN	High Efficiency Klystron Simulations	
	Georgy Sharkov	AO "NIITFA"	ABSTRACT	novel technique of solid-state amplifiers design
	SHA Peng	IHEP	ABSTRACT	Pre-study of CEPC SRF System
	ABAJO CLEMENTE, CAROLINA	CERN	ABSTRACT	First results of large size SRF cavity fabrication by electrohydraulic forming

Time planning towards CDR

CDR Timeline – Publication 28/29 Nov 2018

We have to start here!

