

29th Meeting of SRF Group in IDT/WG2

- ✓ Proposal for SRF Time-critical WPs
- ✓ Others (if any)

Attendees: A. Yamamoto, K. Umemori, S. Belomestnykh, M. Liepe, R. Geng, R. Rimmer, D. Delikaris, E. Cenni, L. Monaco, P. Burrows, S. Stapnes, Kirk

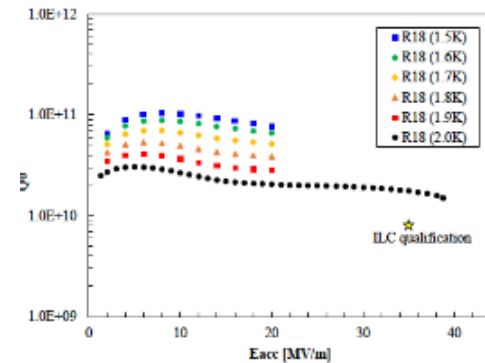
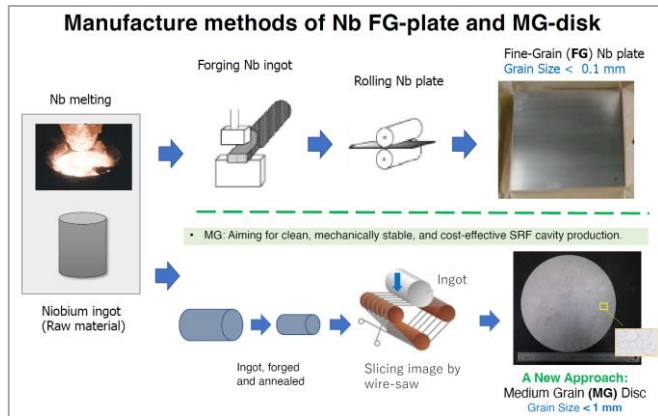
<https://agenda.linearcollider.org/category/256/>

WP-prime 1: SRF Cavity

(Scoping the Industrial-Production Readiness)

- ◆ Research with single-cell cavities to establish the best production process
 - ◆ Advanced Nb sheet production method
 - ◆ Advanced surface treatment recipe
- ◆ Globally common design compatible with High Pressure Gas Safety (HPGS) regulation
- ◆ 24 nine-cell cavities are to be developed for industrial-production readiness
 - ◆ 8 cavities (4 / batch) in each region
 - ◆ Production process optimized in each region encouraged
- ◆ RF performance/success yield to be examined (at least including 2nd pass)
 - ◆ 3rd pass to be examined if effective

	# of cavities to be produced		
	Americas	Europe	JP/Asia
single-cell	2	2	2
nine-cell	8	8	8 (+ 12)



Material/Sub-component

QA of Material/Sub-C

Cavity Production

Surface Process

Vertical Test =
Cavity RF Test

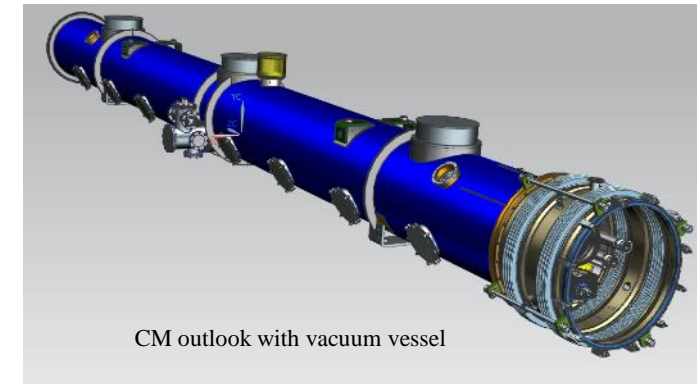
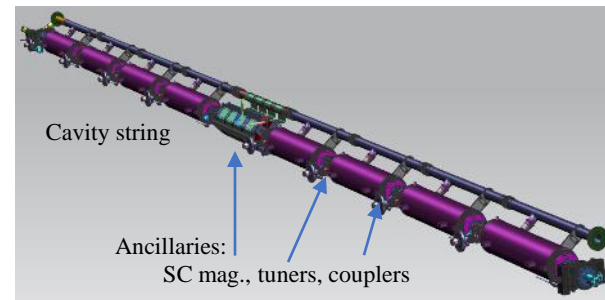
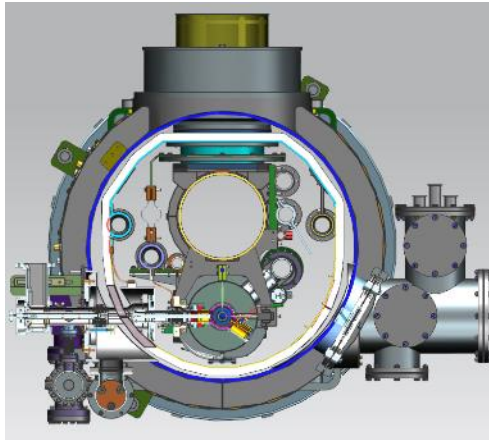
Production process



WP-prime 2: Cryomodule (CM) design

(Scoping the CM Global Transfer and Performance Assurance)

- ◆ Unify cryomodule (CM) design with ancillaries, based on globally common drawings and data-base
- ◆ Establish globally compatible safety design to be approved by HPGS regulations individually authorized in each region.



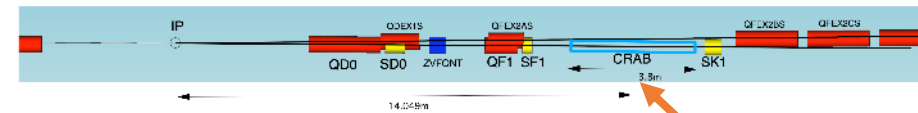
	Americas	Europe	Japan/Asia
CM tech. design base	LELS-II	Euro-XFEL	ILC-TDR
HPGS regulation base	ASME	TÜV and EN	JP-HPGS act
ILC CM design	Common CM design globally adaptable to HPGS regulation in any regions		

WP-prime 3: Crab Cavity Development with down-selection

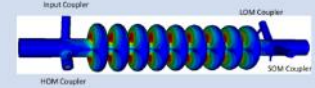
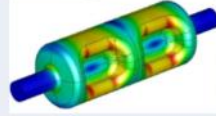
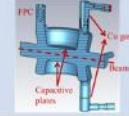

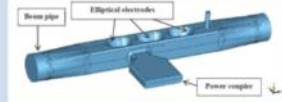
- ◆ RF property simulation to optimize cavity design
- ◆ Pre-down-selection to choose two primary candidates
- ◆ Development and evaluation of two prototype cavities
- ◆ Demonstration of synchronized operation with two prototypes
- ◆ Down-selection to choose final cavity design
- ◆ Cryomodule design based on final cavity design

two beamline distance

$$14.049\text{m} \times 0.014\text{rad} = \mathbf{197\text{mm}}$$



Item	Recent specification (after TDR)
Beam energy	125 GeV (e ⁻)
Crossing angle	14 mrad
Installation site	14 m from IP
RF repetition rate	5 Hz
Bunch train length	727 μsec
Bunch spacing	554 nsec
Operational temperature	2.0 K (?)
Cavity frequency	1.3/3.9 GHz
Total kick voltage	1.845/0.615 MV
Relative RF phase jitter	0.023/0.069 deg rms (49 fs rms)

Elliptical/Racetrack (3.9 GHz)	Lanc. Univ.	
RF Dipole (RFD)	ODU	
Double Quarter Wave (DQW)	CERN	
Wide Open Waveguide (WOW)	BNL	
Quasi-waveguide MultiCell Resonator (QMIR)	FNAL	

Schedule of SRF (Crab/Steering-Panel) Group Meeting in IDT/WG2

Meeting #	Date	Contents
29	24/May	Proposal for SRF Time-critical WPs

Questions/Discussions/Comments (memorandum) @29th meeting

Translation by Kirk

- Proposal for Time-critical WPs
 - SC-magnet port can be changed to the coupler side (originally tuner port side).
 - KEK needs a lot of cavity drawings for HPGS, especially interfaces between different materials.
 - KEK and FNAL will have a meeting for this activity on June.