

SCRF Monthly WebEx Meeting

June 30, 2010

Agenda

1. Report from PMs (5 min.)
2. General Report from Group Leaders (15 min.)
3. Special Discussions
 1. TDP R&D Plan (Rel. 5) Preparation (30 min.)
 2. BAW-1 Preparation (10 min.)
 3. Others
 1. Next meeting, July , 28

Report from PMs

- GDE meeting held,
 - ADI meeting: June 23
 - 10 Hz Low-Energy Operation
 - 10 Hz is for e- linac for producing e+, and
 - 5 Hz for e+/e- collision,
- CFS Integration workshops (planned) in July and August
 - Daresbury Laboratory: July 12 – 13,
 - E+ source, damping ring, BDS, and Detectors,
 - SLAC: Aug. 2-3,
 - E- source, RTML, ML, and Detectors,
ML utility (water, and electricity) to be discussed,
- ICHEP High Energy Conference, >> [Transition from TDP-1 to TDP-2](#)
 - Held at Paris, July 22 -
- Baseline Assessment Workshop (BAW) – 1, planned
 - Held at KEK on Sept. 7 – 10,
 - Single tunnel HLRF (Sept. 7 – 8)
 - Accelerating Cavity Gradient (Sept. 9- 10)
- FLASH workshop
 - Held at DESY on Oct. 4 – 7,
- ILC-CLIC collaboration meeting
 - Held at CERN on Oct. 18 – 22



TDP R&D Plan Rel-5: Draft

Discuss it, today



DRAFT-SCRF-ay-100630

ILC Research and Development Plan for the Technical Design Phase

Release 5

July 2010

ILC Global Design Effort

Director: Barry Barish



SCRF Main Subjects

1a. Request for Rongli G.:

- Proposal for R&D plan and strategy for improving the cavity gradient, Q_0 , and radiation,
- Proposal for the way of evaluation in terms of radiation which also cause the limit of the gradient,

1b. Request for Camille G.:

- Proposal for further evaluation of the cavity performance based on the current status of the production yield plot,
 - **spread of cavity gradient and the quantitative evaluation with a new plot and width (RMS),**
 - **Q_0 value evaluation at $G = 31.5$ MV/m,**

1c. Request for Akira in communication with Jim K

- Proposal for re-arrangement for the cavity/cryomodule cavity gradient specification for the iLC accelerator components and for the operation



SCRF Major Subjects

2a. Request for Hitoshi H.;

- Proposal for R&D plan for the cavity integration including tuners and input couplers, including a systematic test plan for S1-Global, which contain these evaluation,
- Proposal for a cavity fabrication (and industrial R&D) facility to be established at KEK as an approach,

2b. Request for Jim K. in communication with Bob K. :

- Proposal for R&D plan for the cavity mass production in the US,

2c. Request for Akira (myself) in communication with DESY (Nick will help me),

- Input and reflection of the progress in XFEL mass production program,



SCRF Major Subjects

3. Request for Norihito and Tom in cooperation with Harry and Hirotaka

- Proposal for R&D plan for the cryomodule integration, including the cryomodule assembly and cryogenic test plan for S1 Global and for further (S2 cryomodule),

4. Request for Shigeki F. and Chris N. ;

- Proposal for R&D plan for KCS and DRFS in single tunnel - Further proposal for ACD RF such as Marx Generators,

5. Request for Chris A. in communication with Jim K., and Vladimir K.

- Proposal for R&D plan for split-quadrupole in cryomodule,
- Proposal for R&D plan for cavity alignment and tolerances,

6. Any others, if they should be included.



R&D Plan To be updated

- Draft due: June 11 from Group Leaders and Collaborators
- **SCRF Draft Completion; June 30**

1st BAW

Announced, May 3

- Date: [Sept. 7 – 10, 2010](#)
- Place: KEK
- Subjects:
 - Single tunnel HLRF systems (Sept. 7 – 8)
 - Accelerating gradient (Sept. 9-10)
- Announcement
 - Distributed to GDE mailing list including physics/detector executive members,
- URL and Indico Agenda including registration
 - Still to be prepared, and ask for Tetsuo's cooperation

Preparation for the 1st BAW

- May 7: SCRF webex meeting and homework assignment
- May 26: AD&I meeting
- June 2: SCRF webex meeting and progress report from each collaborator,
- June 23: AD&I meeting
- June 30: SCRF webex meeting and preliminary draft report to be distributed >>> in progress, assuming R&D plan draft can be partly used.
- July 21: AD&I meeting
- July 28: SCRF meeting and draft report to be distributed,
- Aug. 25: SCRF meeting and the final report (prior to the 1st BAW) to be distributed

Discussion Topics: Single-tunnel HLRF system in the 1st BAW, Sept. 7-8, 2010

- KCS:
 - RF power margin required for cluster operation, including gradient spread, as consistent with cavity production strategy,
 - Tuning and control strategy, including impact on high gradient operation and required gradient operational margin
 - RF amplitude and phase performance tolerance within a cluster; allowed common-mode and normal-mode fluctuations,
 - R&D required, including demonstrations of component performance and demonstrations with small clusters
- DRFS:
 - Cavity and klystron sorting and resulting required RF power margins
 - Installation strategy; needed tunnel infrastructure and access
 - RF amplitude and phase performance tolerances, including gradient spread, as consistent with cavity production strategy,
 - R&D required in the remaining half of the TDP (and beyond) including radiation shielding, klystron lifetime, redundancy strategies
- Backups:
 - Original RF system in RDR, in single tunnel, just in case, as a backup,

Discussion Topics: Accelerating Gradient

1st BAW, KEK, Sept. 9-10, 2010

- Gradient Improvement Studies:
 - material/fabrication, surface processing, instrumentation and repair
 - strategy to overcome 'quench', and 'field emission' and to maintain moderate cryogenic load,
 - improvement of gradient and achievement of adequate yield,
- Strategy for Average Accelerating Gradient in the ILC:
 - Overview and scope of 'production yield' progress and expectations for TDP, including acceptable spread of the gradient needed to achieve the specified average gradient,
 - Specifications of Gradient, Q0, and Emitted Radiation in *vertical test*, including the spread and yield,
 - Specifications of Gradient, Cryogenic-load and Radiation, including the gradient spread and operational margin with nominal controls, in *cryomodule test*,
 - Specifications of Gradient, Cryogenic-load and Radiation, including the gradient spread and the operational margin with nominal controls in *beam acceleration test*,
 - Strategy to define and specify 'Emitted Radiation', (Radiation that may result in increased cryogenic-load and usable gradient limitations),
 - Strategy for tuning and control, including feedback, control of 'Lorentz force detuning', tolerances and availability margin,
 - Impact on other accelerator systems: CFS, HLRF, LLRF, Cryogenics, and overall costs.

2010 TLCC timeline

- PAC Review
 - May (Valencia)
 - November (Eugene)
- Assignment of Lol and MDI contact persons
- Wednesday Webex meetings – (all or part)
 - SRF, CFS, AS, AD&I
 - preparation for Baseline Workshops
- ECFA LC Workshop - together with CLIC team (Geneva)
- Baseline Workshops
 - September 7-10, 2010 (KEK)
 - January 18-21, 2011 (SLAC)
 - *Each Workshop is to culminate in a document, to be submitted to the Project Director*
 - *Requires Preparation / discussion in advance*

Next SCRF WebEx

- July 28
 - Draft report for BAW-1.
 - Please help us to prepare for the meeting to be successfully carried out
 -