

EDR Cavity KOM summary of 09.20.2007

H. Hayano

09.20 morning session 1

Summary of yesterday's session

Report from Hayano.

Some discussion on Snowmass-definition, 35MV/m, which should be revisited.

Review of Alternate, and plans for EDR

- Z. Li, "Cavity shape Studies"

Shape comparison for tuning sensitivity band-width, HOM damping, multipacting, symmetrizing.

Design example of LLF with 5% Es down, 10% Hs down, 10% R/Q up with optimized HOM coupler and reducing beam pipe at flange.

Input coupler wake will be shadowed by this reduced beam pipe, become similar value of wake by input coupler inner conductor only.

- C. Reece, "Cavity processing R&D at Jlab"

EP studies (electro-chemical approach, monitoring, hydrodynamic modeling, electrochemical impedance spectroscopy,...)

Field Emission studies by FE viewer.

Study on surface oxide structure by XPS.

Plasma etching study.

09.20 middle session 2

Review of Alternate, and Plans for EDR

- H. Padamsee, “R&D Activity for Field Emission and Vertical EP “
status of vertical EP.
understanding of field emitter inside of cavity.
Review of High Pulse Power Processing (HPP).
- W. Singer, “Large Grain, Single Crystal, NbCu material for SCRF cavities“
review of LG at Jlab, at Asia, at DESY.
performance of LG + EP seems to be better than LG+BCP, and similar to fine grain+EP.
review of Single crystal at Jlab, at DESY.
Single crystal is the most exciting option.
- D. Reshke, “HF + H₂SO₄ free Poligrat/Accel EP: first result“
Secret fluid EP (not using HF and H₂SO₄).
result 21MV/m in single cell, then strong Q-disease.

09.20 discussion session, afternoon

Discussion of EDR design

- C. Pagani, :Preliminary thoughts for convergence

XFEL cryomodule is very close to the ILC baseline design.

Joint effort will reinforce convergence, and XFEL experience will benefit for performance improvement and cost saving.

Changes from XFEL requires more justification.

- discussion

(c) More consideration is needed to change design, especially for tuner.(Shekhar)

(c) Demonstration is clearly required in such case.(Marc)

(c) We need to compare the design difference between RDR and XFEL.(Akira)

(c) XFEL design should be the starting point of ILC, Saclay tuner is good example, however demonstration required, of cause.(Calro)

(c) As a starting point, we need to draft a specification envelop, to show what is required in ILC.(Akira)

(c) Need consideration of R&D cost, as well as ACD cost. When is it available? is also important. Both cost and performance are needed to know.

To make fundamental parameters (or minimum requirement) visible, we need to make a table of specification envelope. Let's make it now for tuner, coupler and cavity.

< Lutz volunteered to initiate and to type in the table. We made the table of the first version. It is on the indeco-page.>

09.20 discussion session (cont.)

- (c) This table should be compare to RDR and BCD. Cost is the next discussion item, not now.
- (c) Cost minimum should be pursued within this given specification. That will give a range of plug compatibility.
- (c) Dramatic design change for cost reduction, which require several years of new engineering design and demonstration must avoid. Design change should be on the line of TTF experience. It should be clearly in EDR timeline.
- (c) EDR is for developing baseline design. Further cost reduction would be the next step. In the pre-production, maybe?
- (c) In the way of industrialization, how much % of full-production would support the EDR baseline? 1%?
- (c) It should be considered in the next step in EDR.
- (c) Is it in pre-production? Or before project approval?
- (c) Major project did not do that.

Time is over, discussion stop here.

Discussion of Rich's Table will be in tomorrow.

end