

KEK status

Jan. 29, 2009

T. Higo

Nextef

- Now started processing at **213ns at 100-110MV/m**. Final is set at 253ns.
- Sometimes suffer from klystron gun arcing. Also interruption due to the additional shield room, adjacent to the present one.

T18_VG2.4_Disk #2

Processing (6)

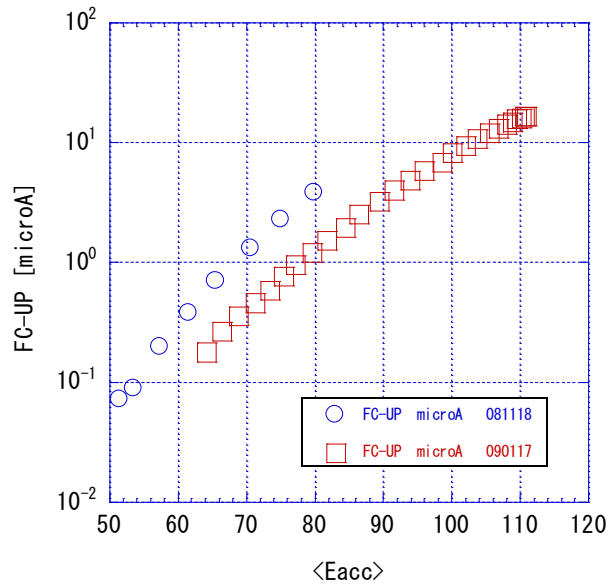
dark current status

Jan. 29, 2009

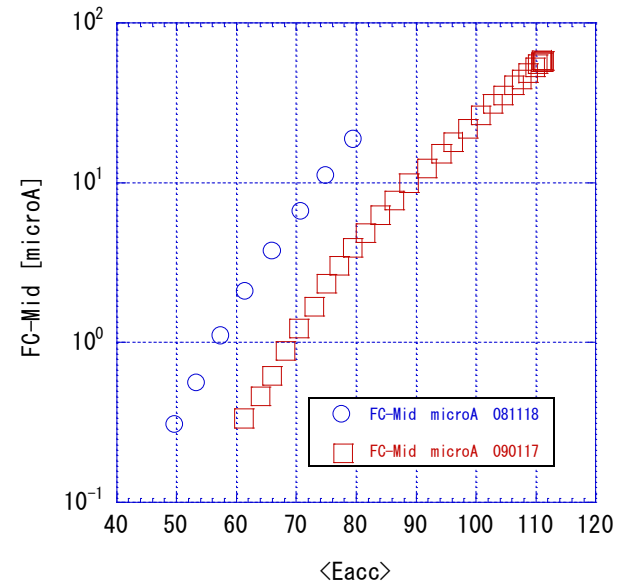
T. Higo

113nsec

Dark current 081118 and 090117
width=113nsec

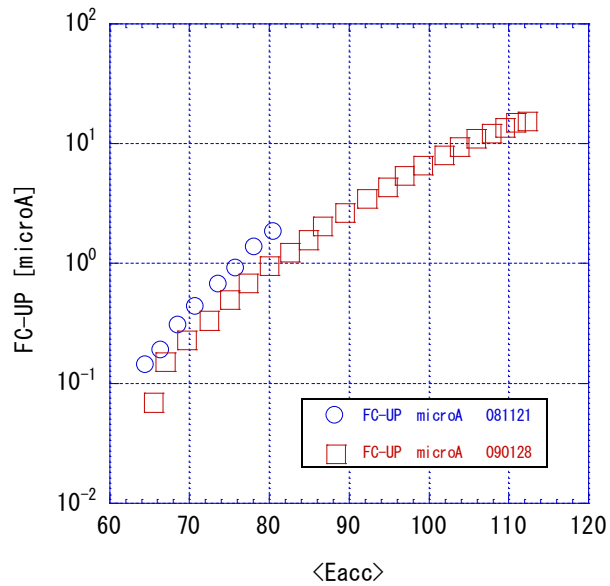


Dark current 081118 and 090117
width=113nsec

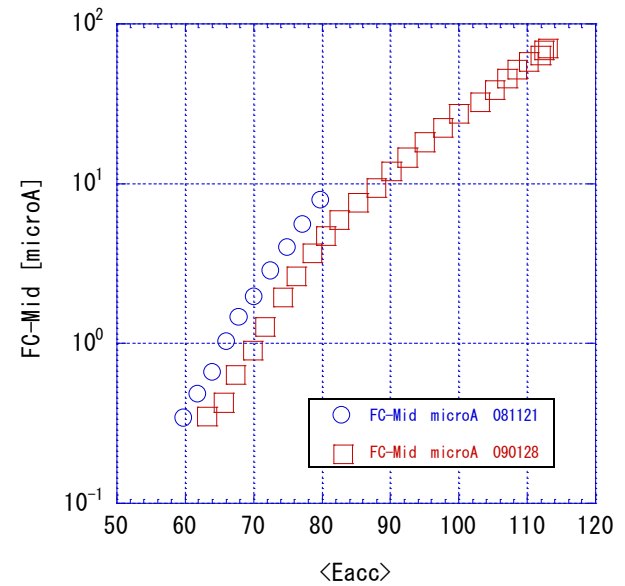


173nsec

Dark current UP 081121 and 090128
width=173nsec

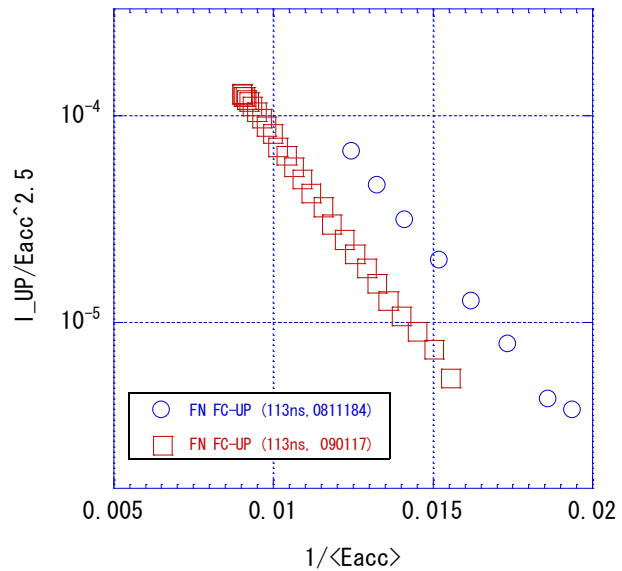


Dark current Mid 081121 and 090128
width=173nsec

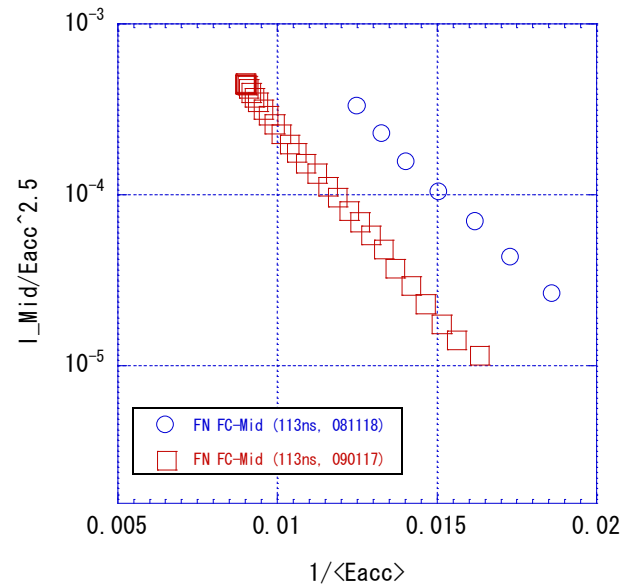


113nsec

Dark Current at 113ns
081118 and 090117

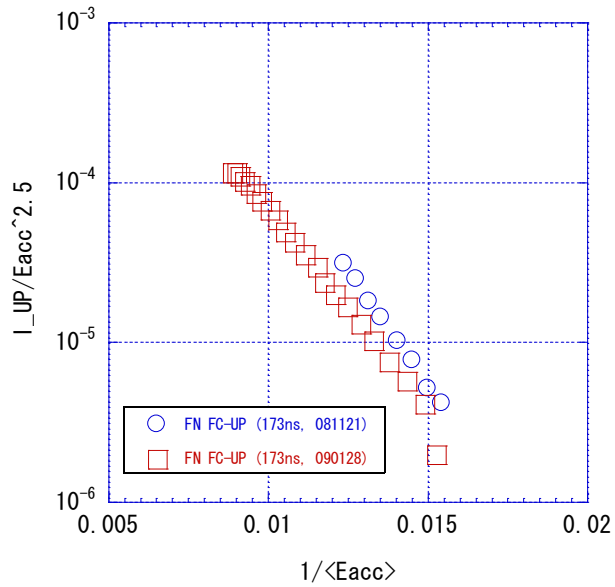


FN FC-Mid Dark Current at 113ns
081118 and 090117

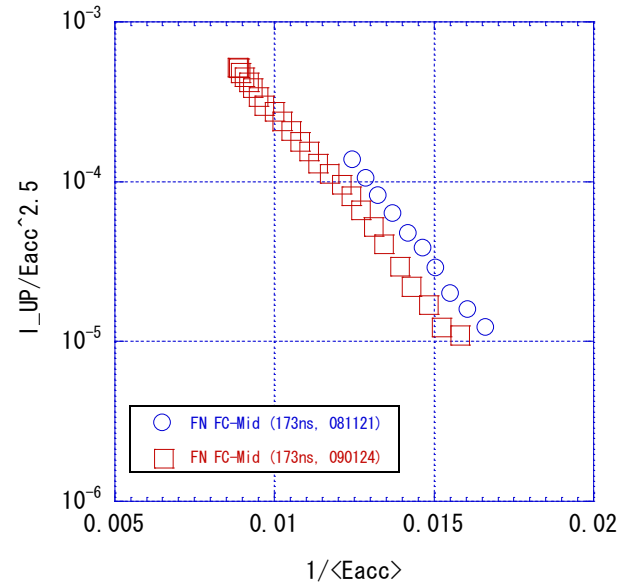


173nsec

Dark Current UP at 173ns
081121 and 090128



Dark Current Mid at 173ns
081121 and 090128



Nextef conclusion

- After reaching 110MV/m, 253nsec, what should we do on it?
 - BD rate measurement w.r.t. Eacc!
 - Long-term running? → maybe not so long due to following programs.
 - Processing to higher field, as much as our system allows.
- **Nextef master plan** in a few months; refer to Matsumoto's talk.

Structure fabrication

- Disk-damp TD18_VG2.4_Disk
 - #2
 - Flatness: not perfect but OK!?
 - RF check before shipping to SLAC
 - #3
 - Parts will be delivered today
- Quad #5
 - Assembled
 - Will be tuned in late February?
 - Can be installed in March

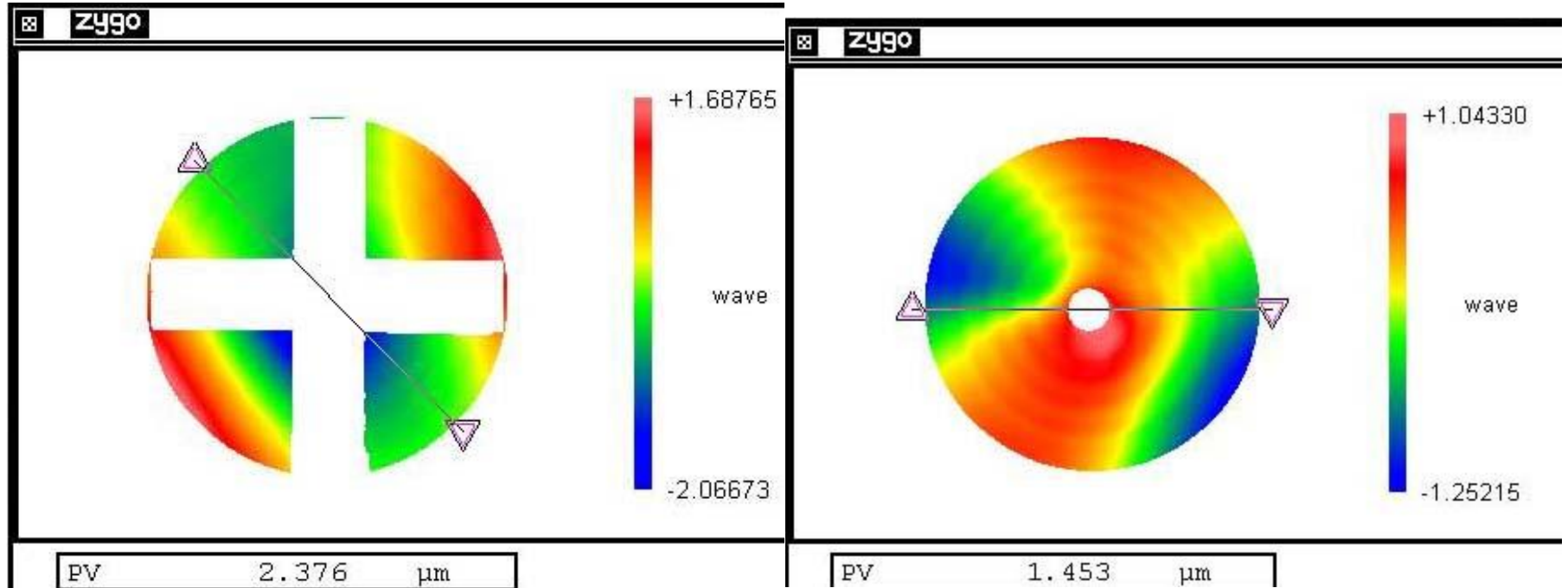
Disk-damp #2 cells flatness

Morikawa data cut and pasted

Summary by Higo

090121

Typical flatness of disk-damp #2 12b



Probably OK

Up and down seems almost reverse manner.

Summary of flatness

- Mostly the flatness is **2~3 micron level**, though both side shapes are roughly in an inverse manner. Therefore, **intuitively most of the cells can be accepted.**
- Input ring: Concave! → **Do additional cut.**
- 15b: a little worrying but accept.
- 16b, 18b: one of four leaves bends strongly. **The reason should be understood.** The cells will be accepted.

TD18_VG2.4_Disk #2

RF check as of part fabrication

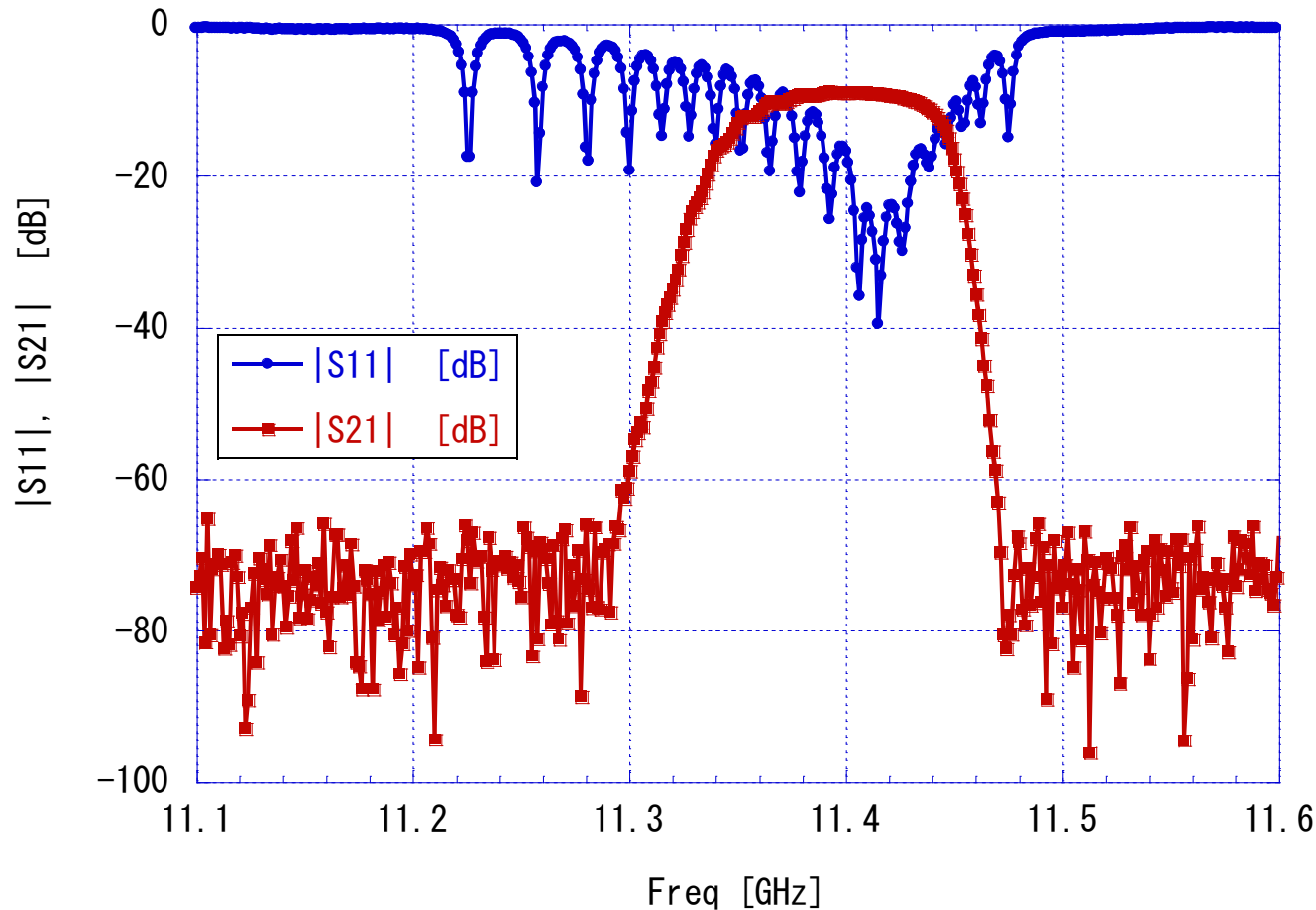
Jan. 20, 2009

T. Higo, J. Zhang, M. Takano

Sij measurement with gentle pressing force

Probably <1kgcm

S_{ij} with axial compression force the same as 090115

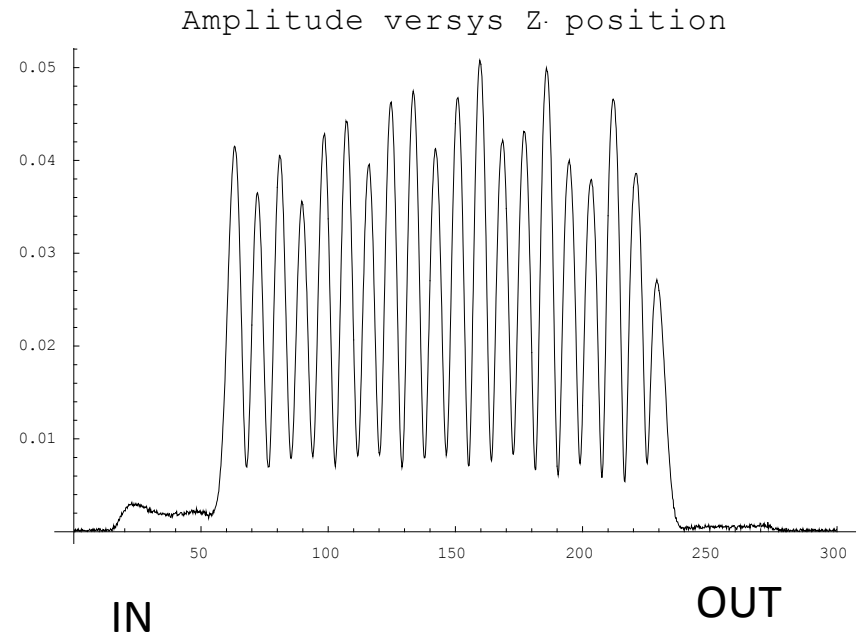
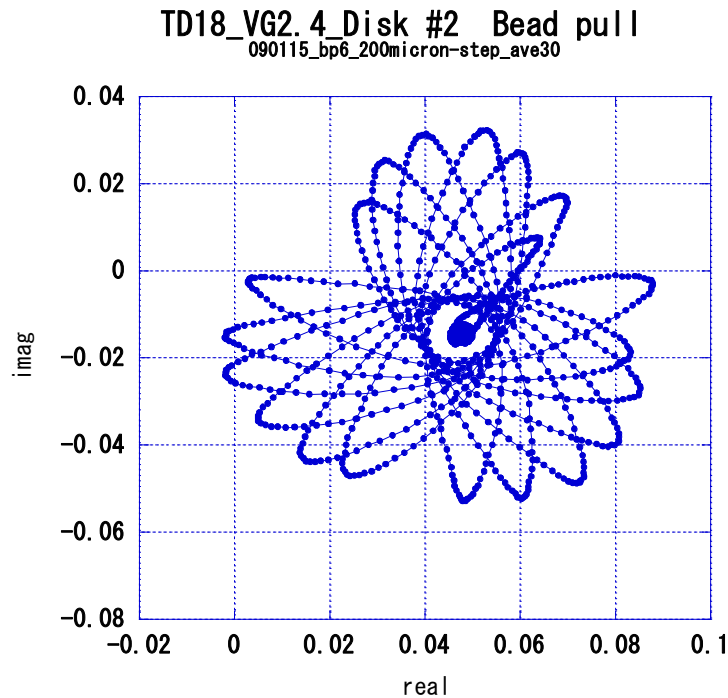


$S_{11} < -22\text{dB}$
Global min. at
11415MHz

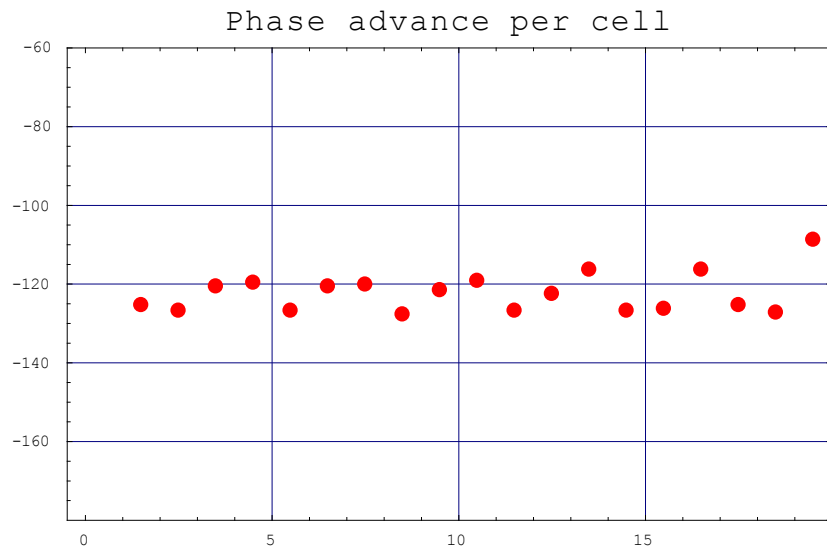
$S_{21} \sim -9.5\text{dB}$

Bead pull raw data

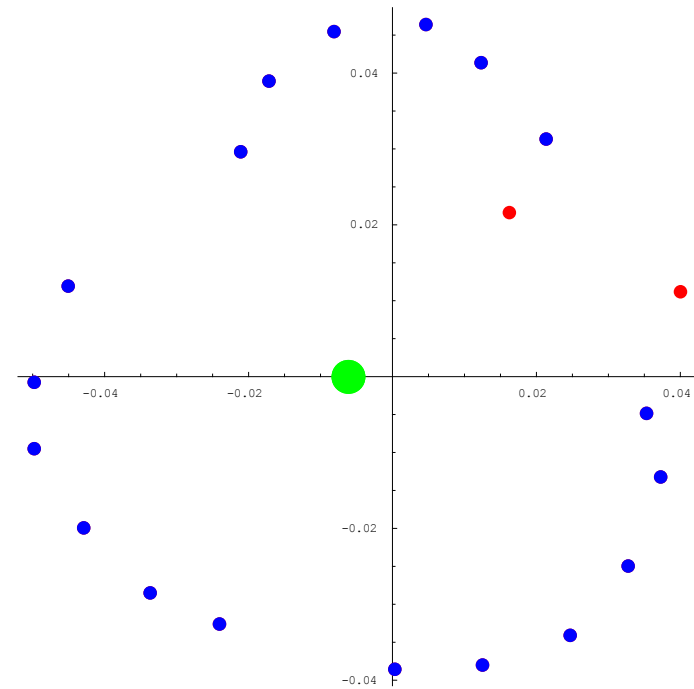
S11 at 11424MHz with the structure gently clamped. Surface temperature at 21.9C in air, humidity speculated to be ~30% or less. Beam pull with 0.2mm step from input side to output.



Dwell points plot



Dwell point BLUE: regular cells, RED: end cells, GRN: cntr of rglr



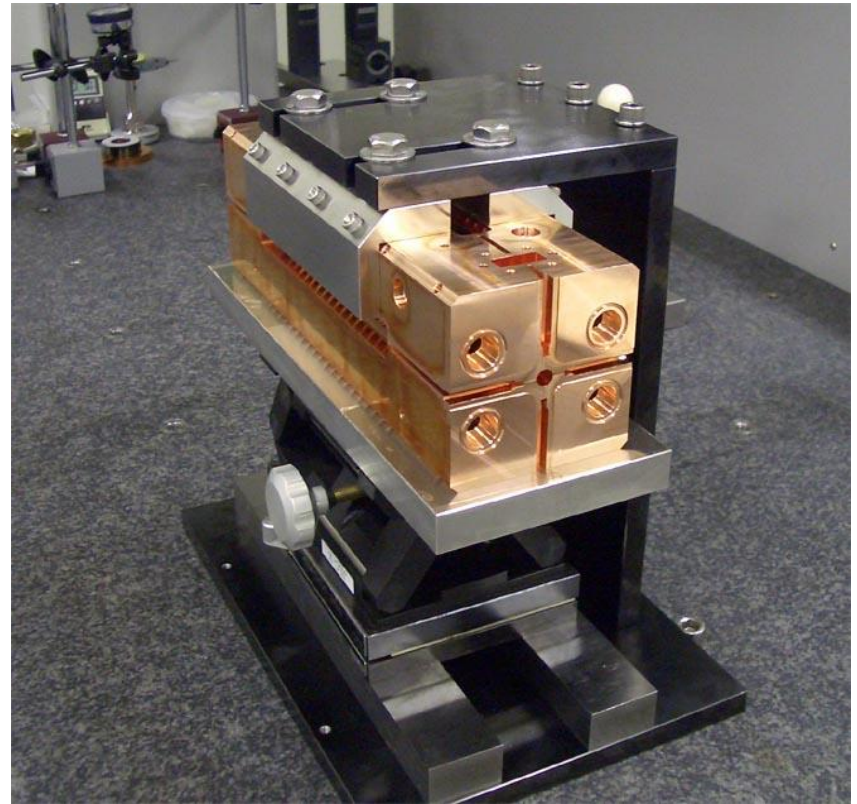
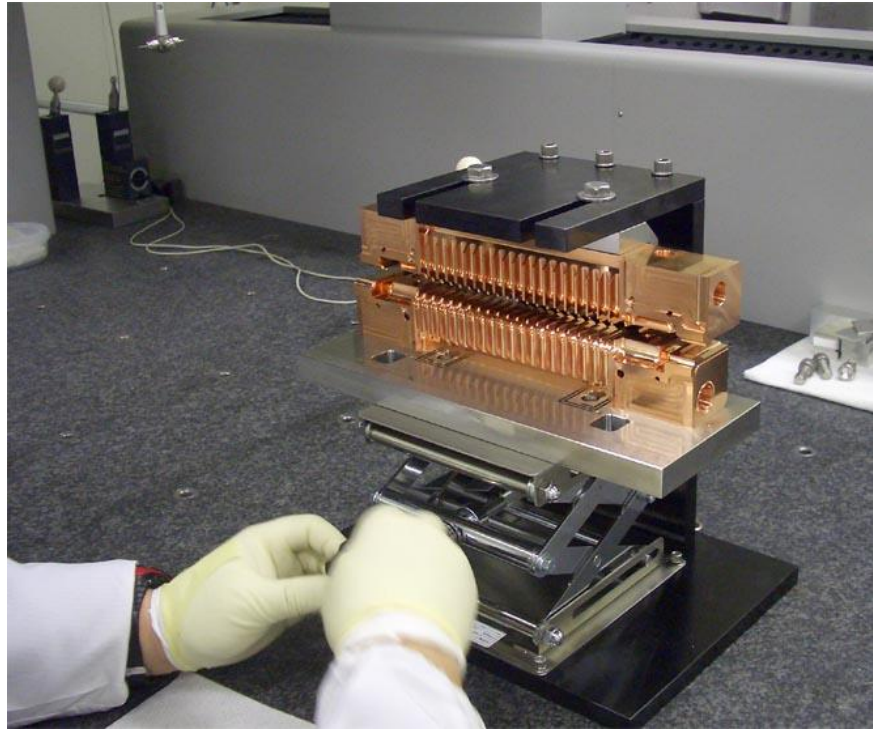
Frequency error estimation

- Measurement at $T=21.9\text{C}$, $H=20\text{-}30\%$, in air. \rightarrow operation at 30C in vacuum makes the resonant frequency $+2\text{MHz}$.
- Bead pull at 11424MHz gives the phase advance of 122deg/cell , **4.6MHz lower in frequency**.
- Then the average frequency should be tuned up by 2.6MHz or so. It is within tuning range.
- Frequency error is **within $\pm 5\text{MHz}$** , even if taking the mismatch from downstream into this frequency error term.
- I appreciate if you can analyse the beam pull data to confirm the result.

Disk-damp #2, #3 Conclusion

- The set of TD18_VG2.4_Disk #2 is OK to go to the assembly process at SLAC, except for those of additional cut for improving flatness.
- The second set #3 were made with the same condition and they are in our hand in this week. As soon as we confirm in the similar manner, we ship these two to Juwen at the same time.
- The shipping may be in early February.

Initial stack of four quads



Quad schedule

- Mutual misalignment is within 20 micros.
- We proceed RF check, S_{ij} and bead pull.
- Cooling pipes are bonded with EBW.
- Then tuning.
- Final cleaning in acetone.
- Put into vacuum vessel.
- Installation in sometime in March.

Questions on quad

- How much clamping force is optimum?
- Attaching waveguides and so on may perturb the original alignment?
- We may just rinse with acetone for #5. any comment?