Experimental Plan at KEKB Positron Ring

Grooved Surface, and Clearing Electrode Ver.2

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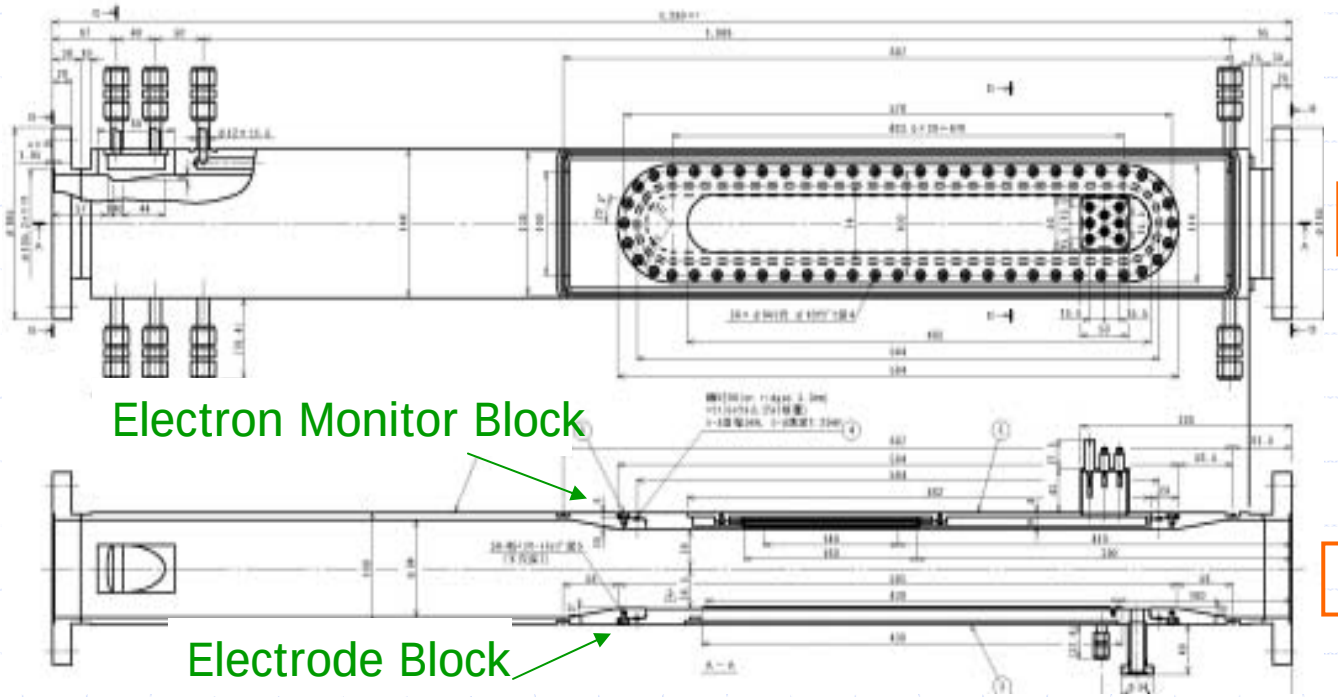
1. Experimental Setup
2. Grooved Surface
3. Clearing Electrode Ver.2
4. Proposal……

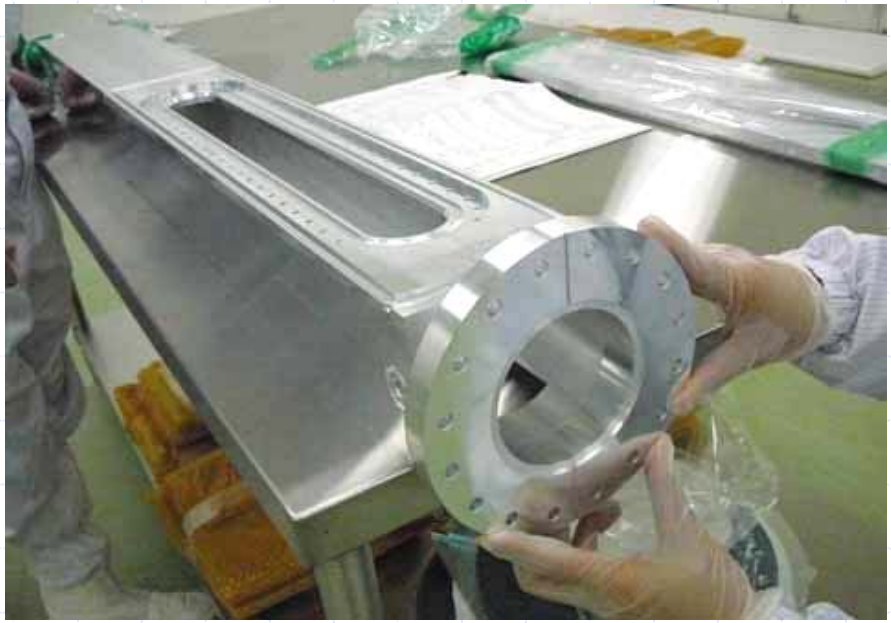
Experimental Setup

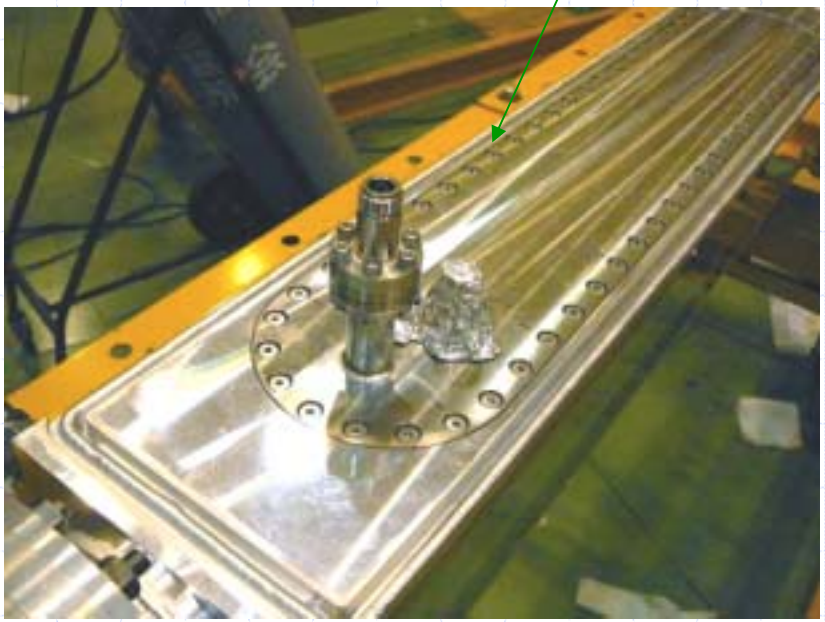
- Use the same setup used in the present experiment on clearing electrode at KEKB.
- An experiment complementary to that at CESR-TA.



Experimental Setup

- Electrode block will be exchanged with a block (flange) with grooved surface

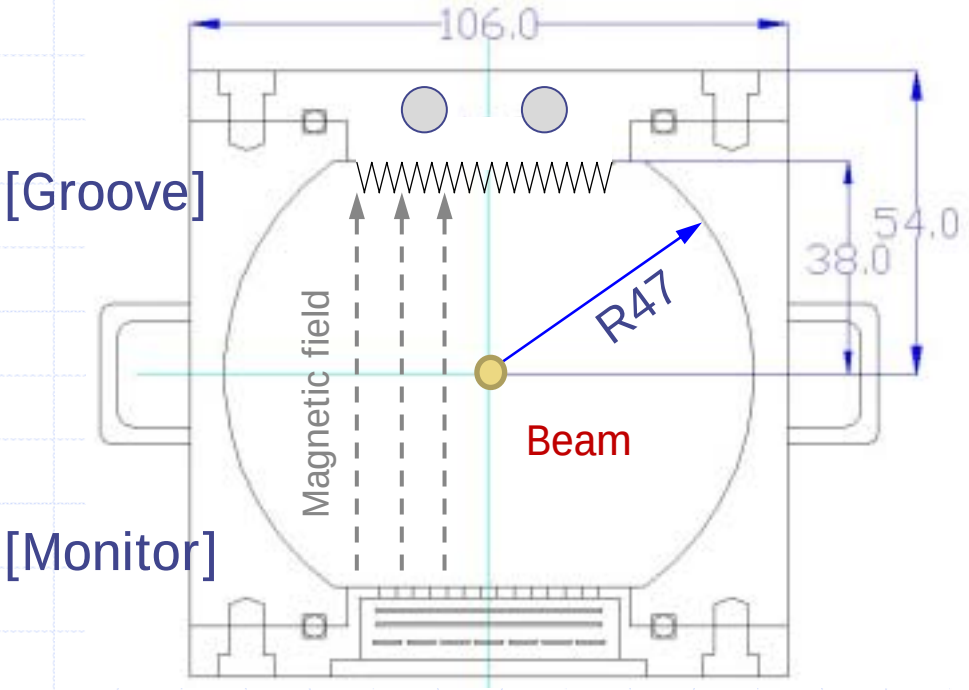




- Use same monitor
  - Improvement of monitor (smaller holes, more strips) is underway, but will not complete in this summer.

Experimental Setup

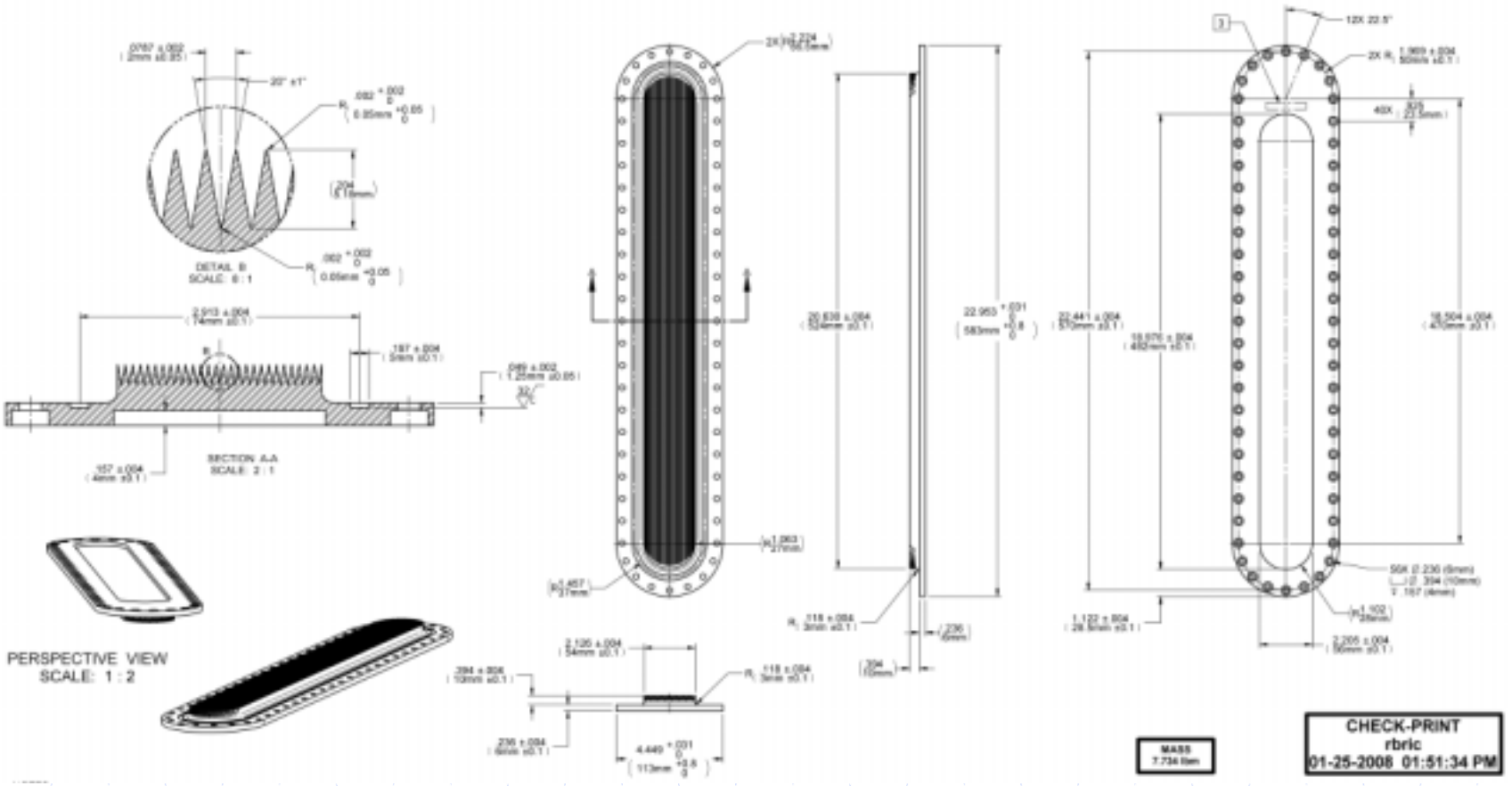
- Use the same location



Wiggler magnets
B = 0.75 T

Grooved Surface

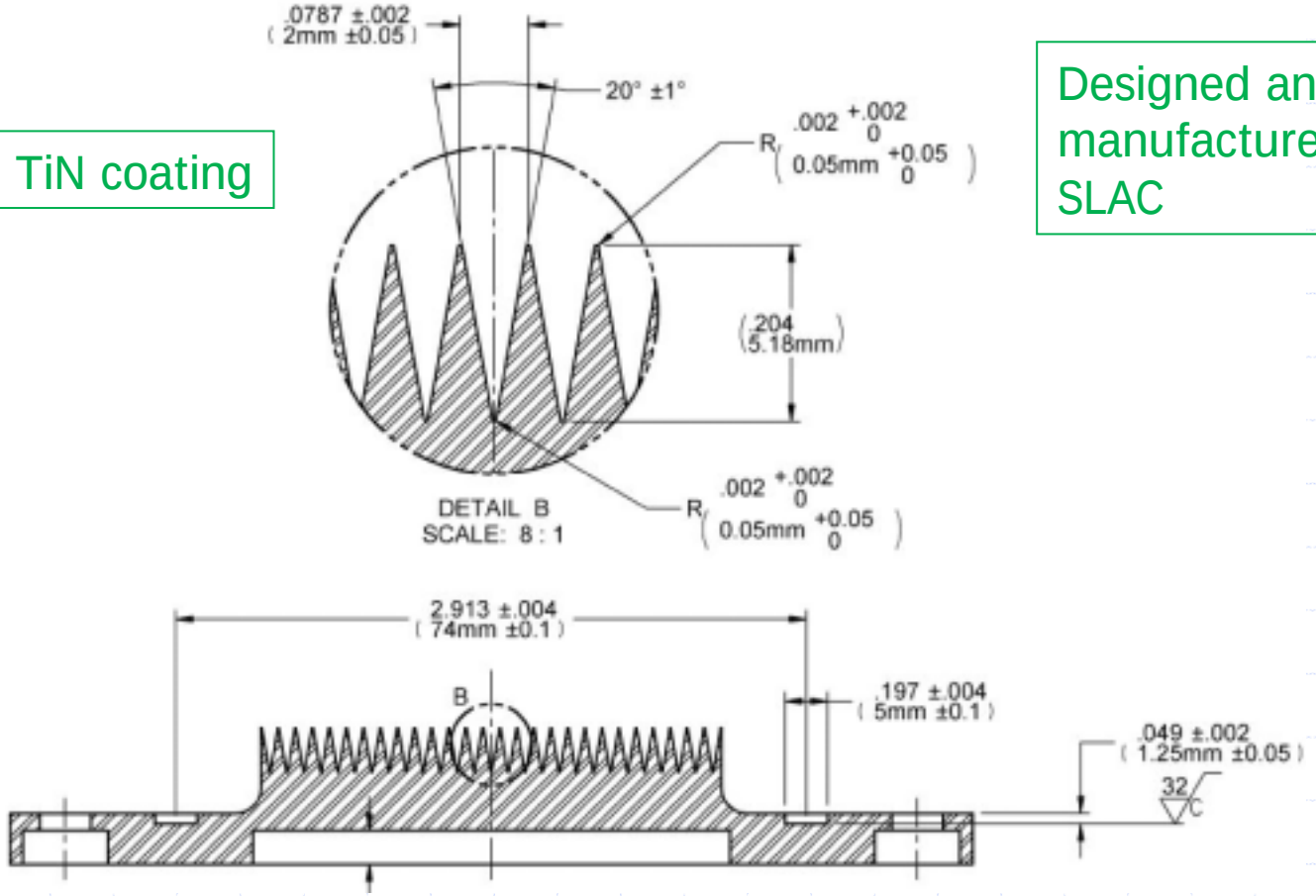
- Grooved block



Grooved Surface

- Groove: δ_{max} should be less than 1.0

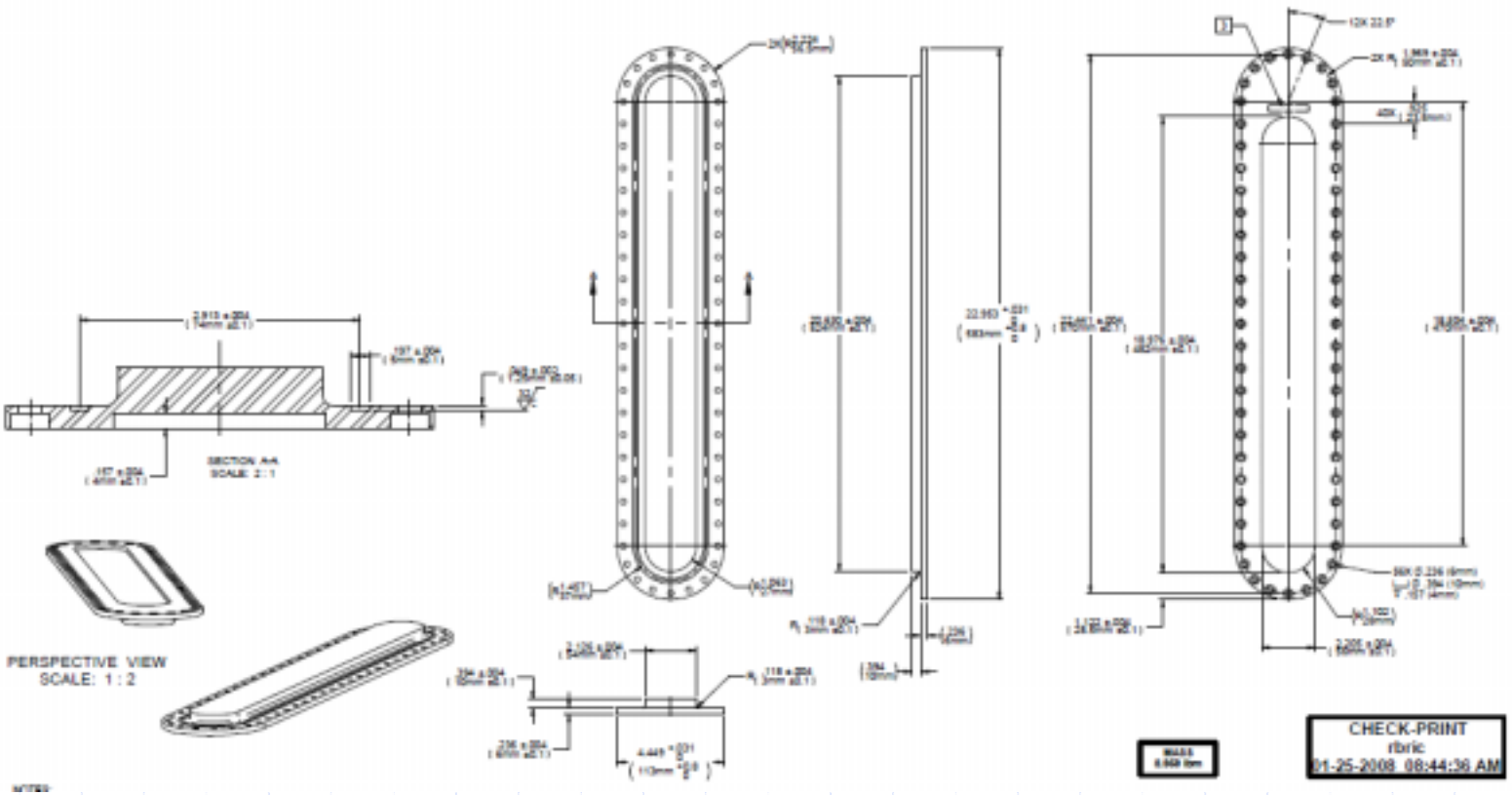
SS + TiN coating



Designed and manufactured in SLAC

Grooved Surface

- Flat surface for reference

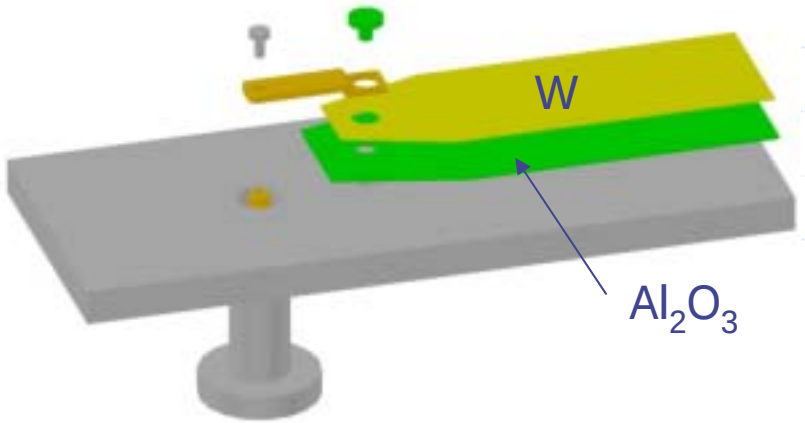


Grooved Surface

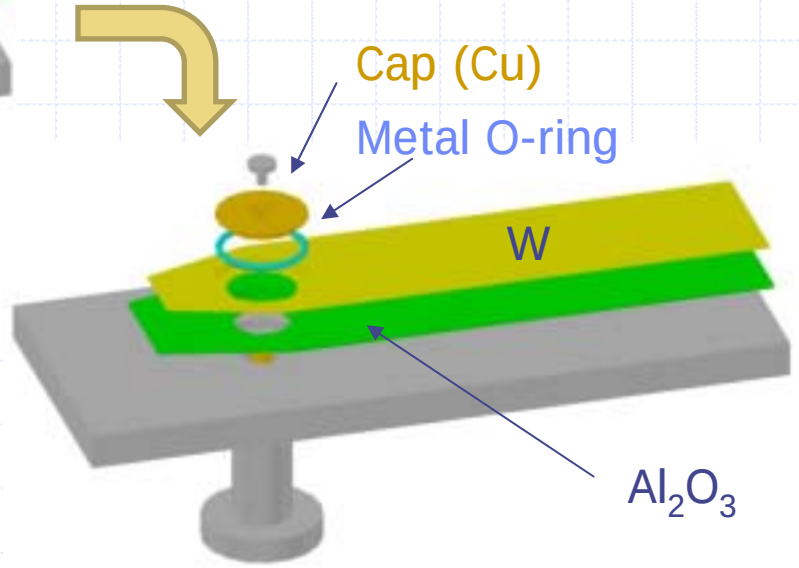
- Schedule
  - Installation: this summer (~9/30)
  - Experiment: next autumn run (10/16 ~ 12/25)
  - Exchange from flat (groove) to groove (flat): ~11/15?
    - Otherwise, groove: 10/16 ~ 12/25, then flat: 2009/3/20~.....
    - Exchange takes ~1.5 day. Pressure recovery ~ one week.
      - Luminosity will recover in one day.
    - Need discussion in KEKB Commissioning Group and Belle.

Clearing Electrode Ver.2

- Improvement is under consideration
  - Connection part: Avoid discharge
  - Based on suggestion by Billing-san



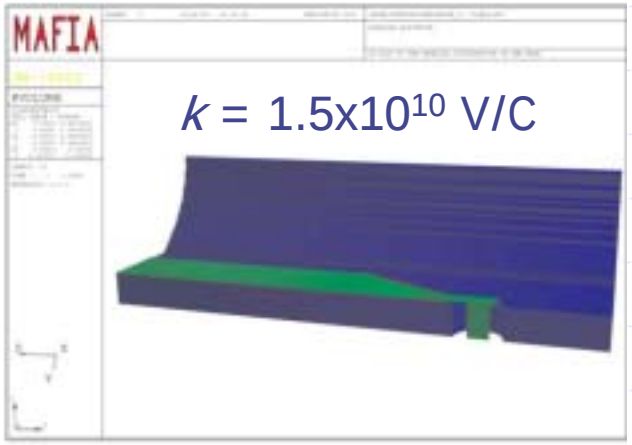
Feed-through port

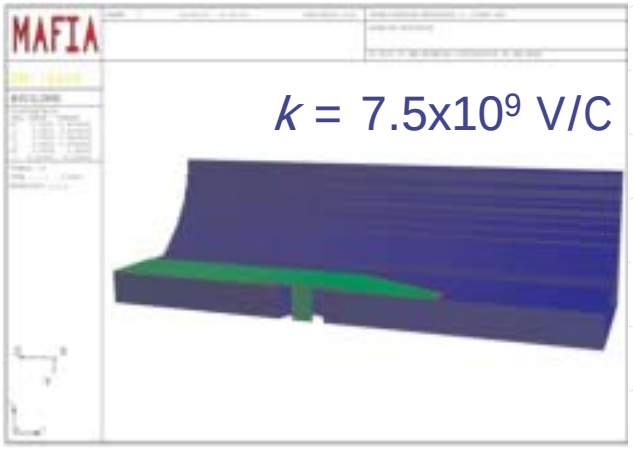


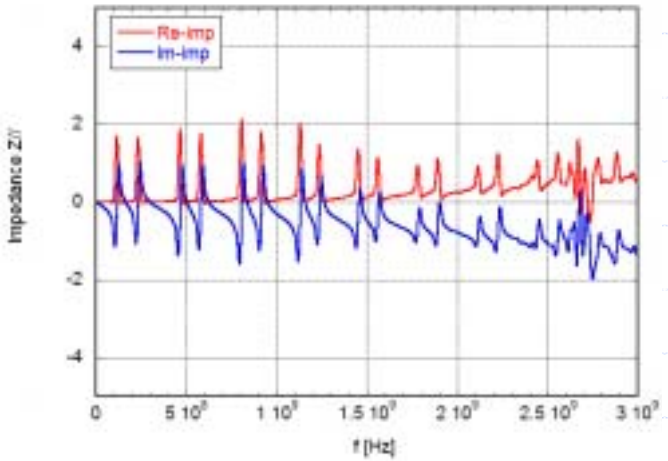
Clearing Electrode Ver.2

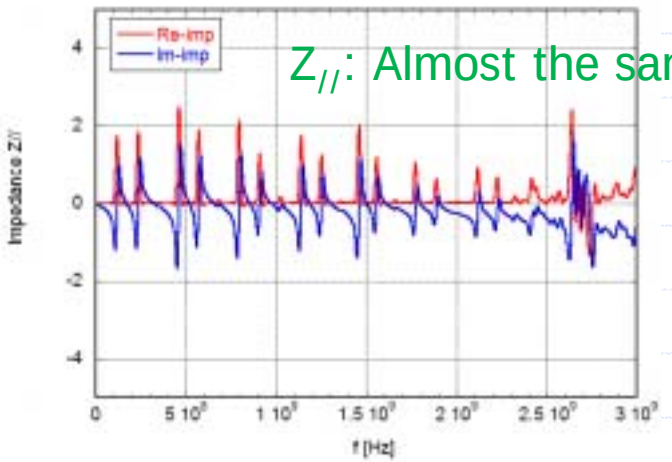
- RF properties

Loss factor: ~1/2





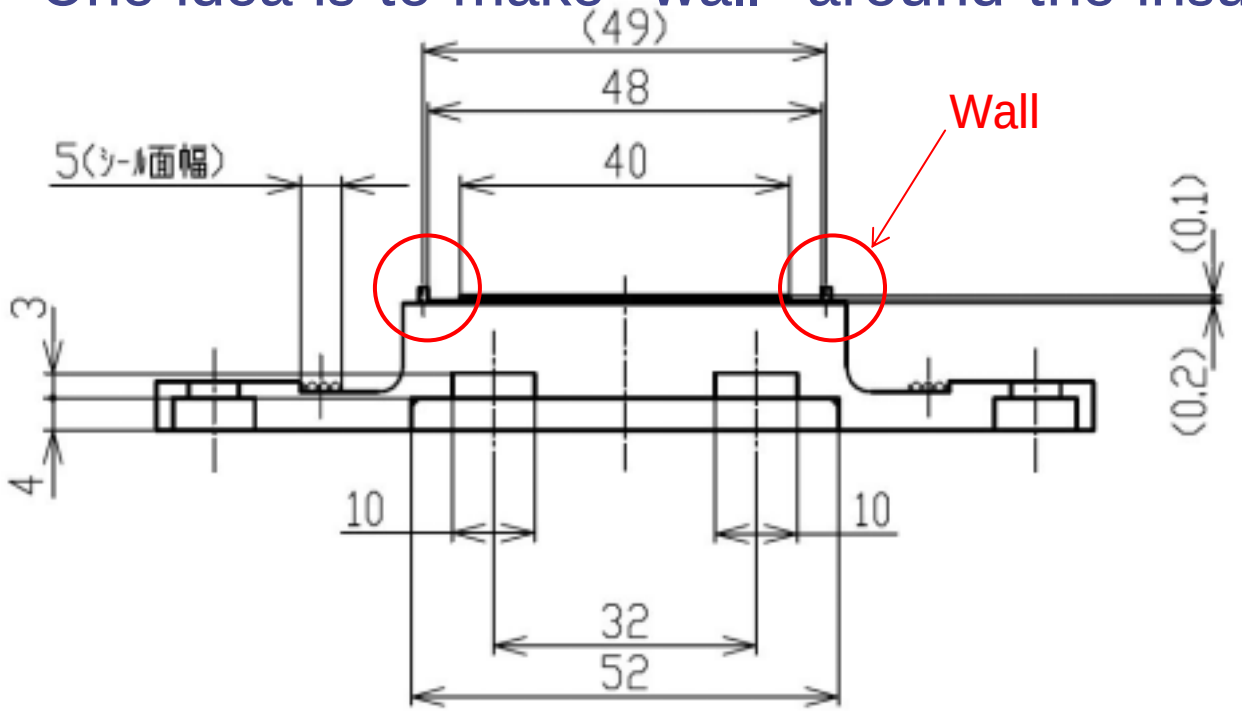




$Z_{//}$: Almost the same

Clearing Electrode Ver.2

- Countermeasure against sputtering
  - Very difficult, if sputtering is a cause of decrease in resistivity.
  - One idea is to make “wall” around the insulator.



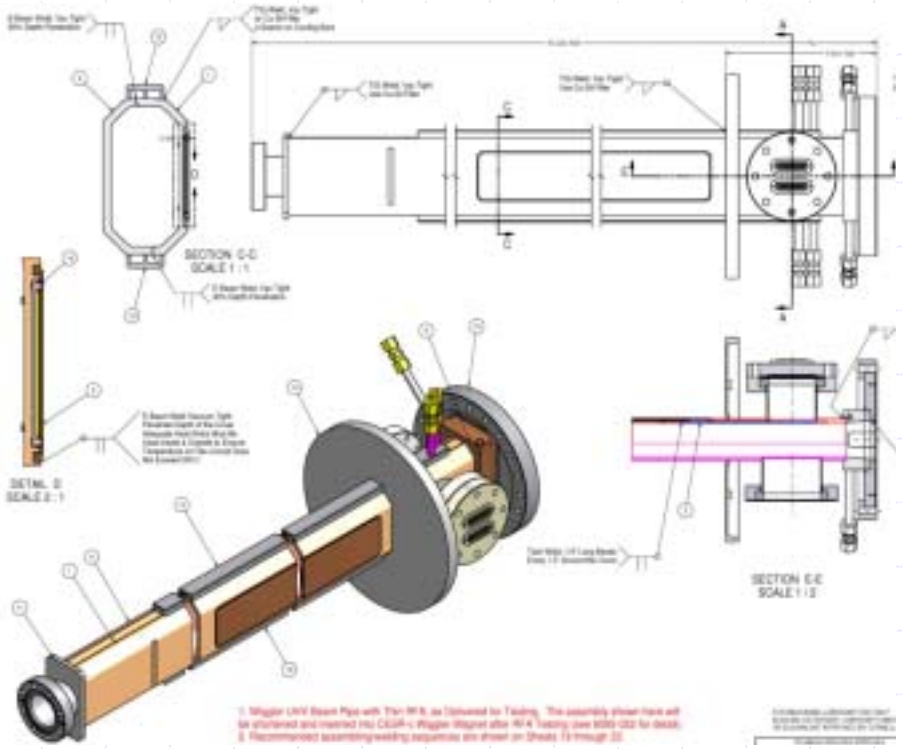
Clearing Electrode Ver.2

- Schedule
  - Installation: 2009/3/20~
  - Experiment: 2009 spring run……

- And proposal is ……

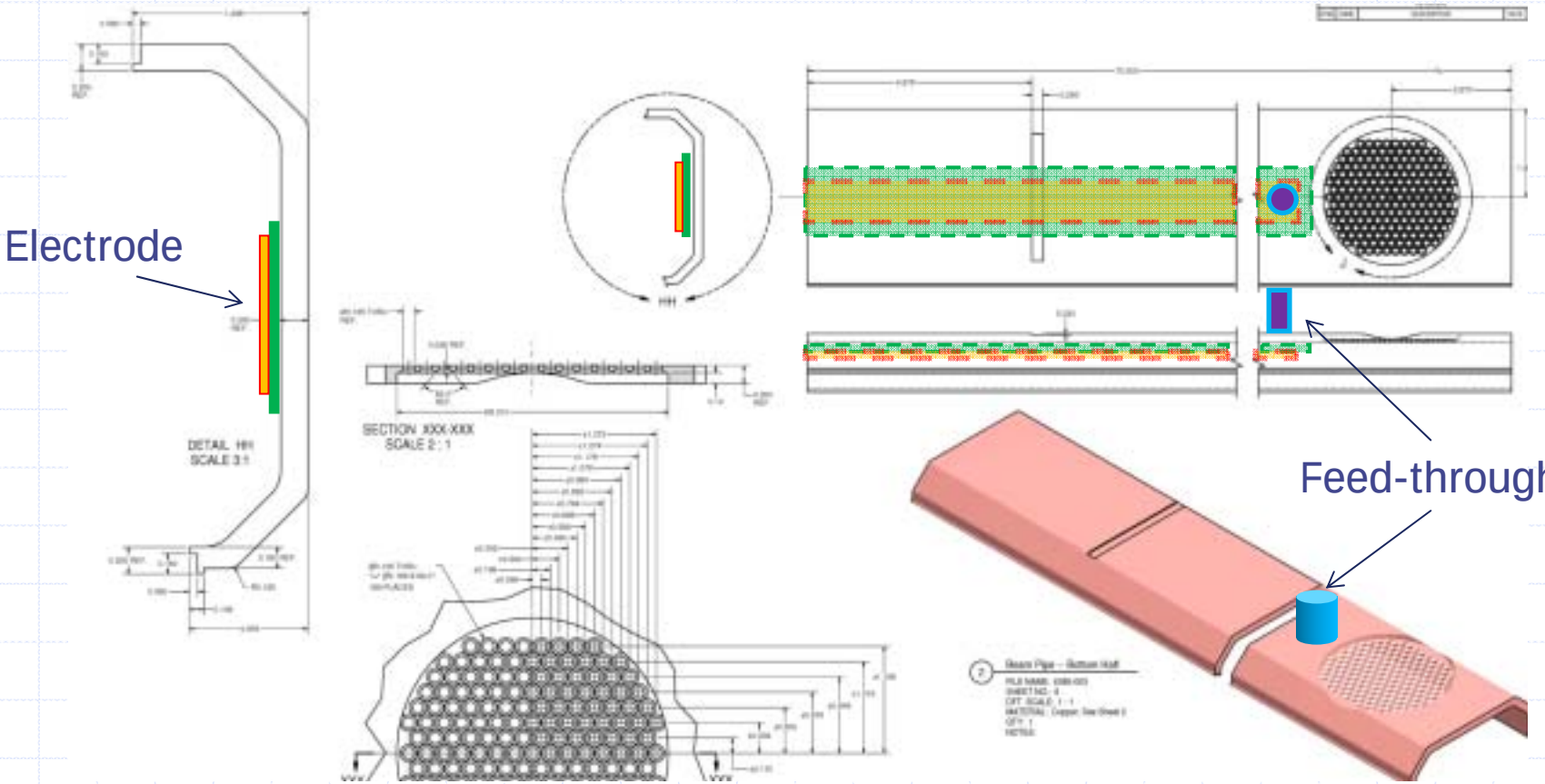
Proposal

- Experiment of clearing electrode at CESR-TA
  - Test complementary to one at KEKB.
  - If wiggler chamber...



Proposal

- Half cut chamber is suitable for thermal spray of electrode material (the present method).



Proposal

- Budget???
- Time schedule???

Future R&D

- How to apply to the real beam pipe
  - Long pipe
  - Curved pipe (if Bending pipe)

  - Welding machined block?
  - Welding plates to form a pipe?
  - Rolling cutter?