

IHEP ILC Cavity Status

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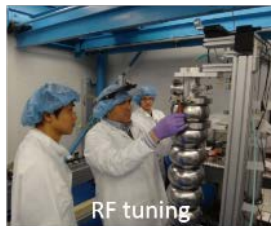
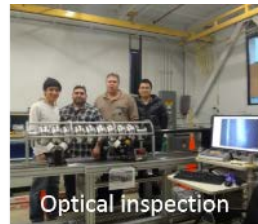
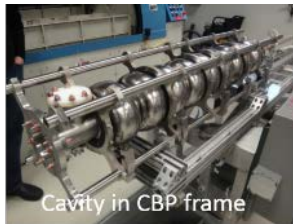
LCC ILC SRF Cavity Group 2nd Meeting
6.Nov.2013

IHEP-02 LL LG Cavity Process and Test in FNAL

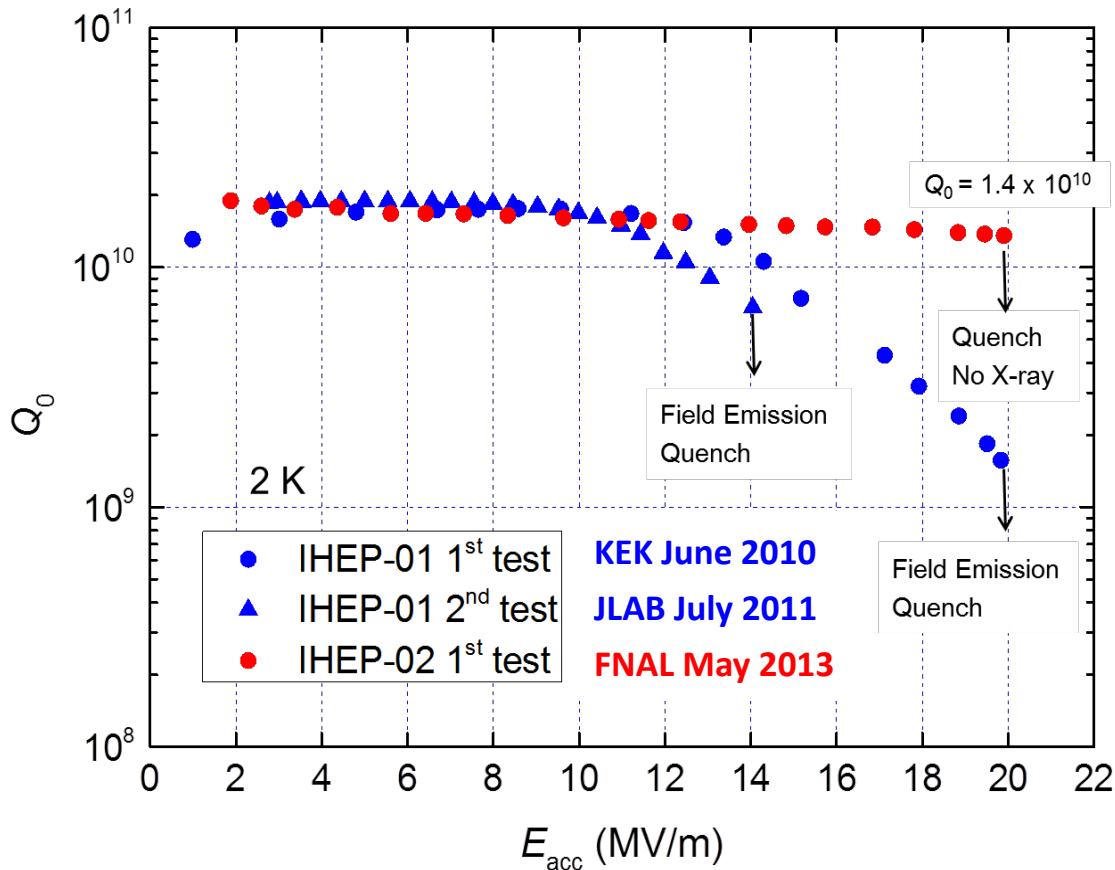
- 9-cell cavity with full end groups



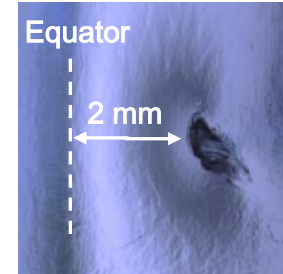
Tumbling 200 μ (mirror finish) + EP 40 μ + 800C.3h + EP 30 μ + HPR + 120C.24h @ FNAL



9-cell Cavity Test Results



IHEP-01: A pit on the iris and possible contamination may be the reason of strong field emission.

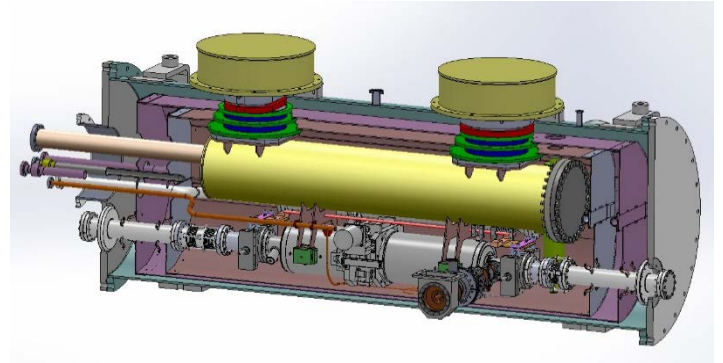


IHEP-02: quench defect has sharp and deep grain boundary step made during half cell pressing.

By passband mode test, 5 cells of IHEP-01 \gtrsim 30 MV/m, 7 cells of IHEP-02 \gtrsim 40 MV/m, both Pi modes quench at 20 MV/m in cell#9 300 deg equator.

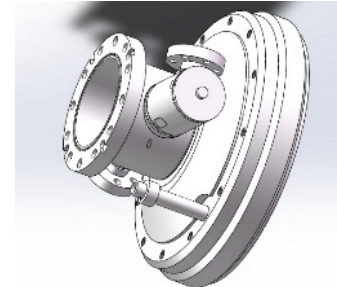
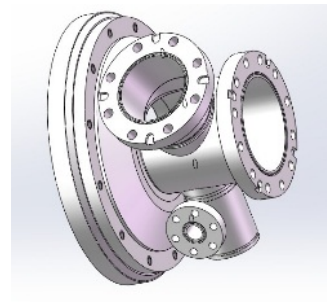
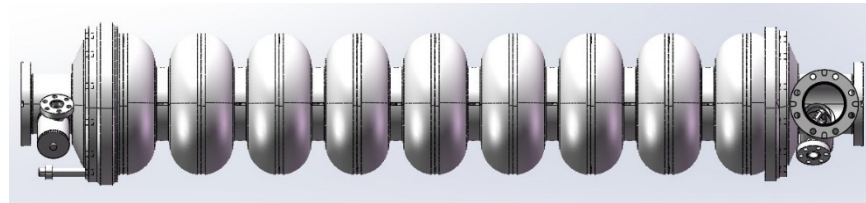
IHEP ILC Test Cryomodule Assembly

- Cavity dressing in Nov.
- Cryomodule assembly in Jan. 2014
- Horizontal test in 2014
- With beam pipes for beam test

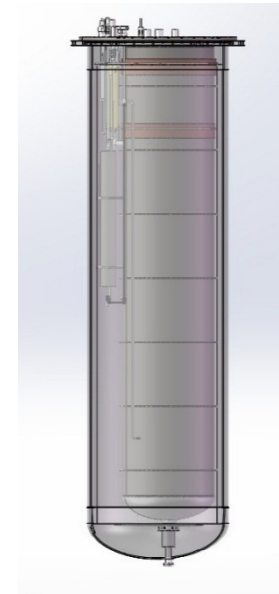
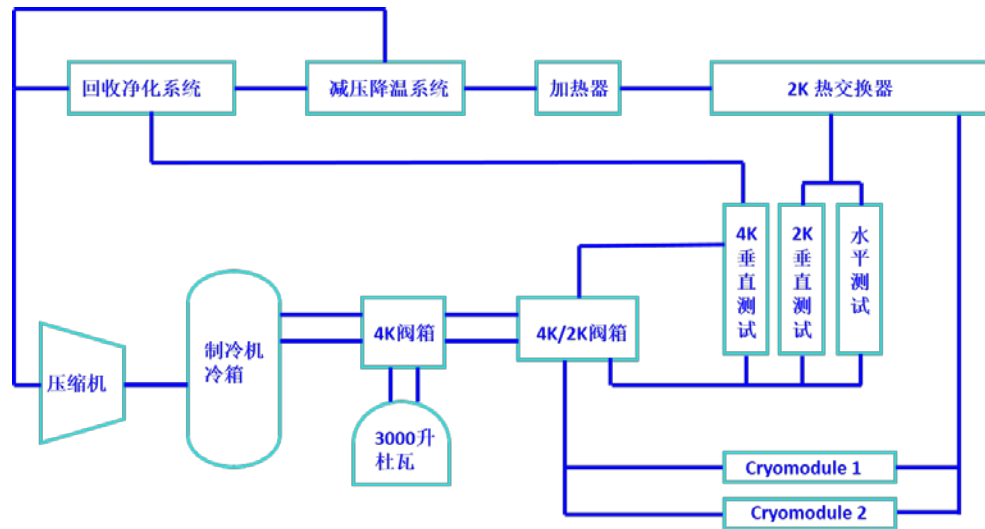


TESLA-like 9-cell Cavity Fabrication

- Fine grain TESLA-like cavity collaborating with KEK
- Machining and welding companies same as IHEP-02 (outside IHEP)
- 10 dumbbells are done; end groups EBW ongoing
- Process and test at KEK in early 2014



IHEP New Cryogenic Plant for SRF R&D



Helium Plant (*Air Liquide*)

- Refrigeration: 1000 W @ 4.5K
- Liquefaction: 284 L / h
- 2K Pumps (total): 8000 m³/h @ 3100 Pa
- Deliver in end 2013, vertical test and horizontal test commission in 2014

Vertical Test Dewar

- With heat exchanger
- Inside diameter: 0.85 m
- Inner depth: 4.2 m
- Deliver in early 2014

IHEP Cavity Industrialization Study



HE-Racing Technology (HERT)

- previous IHEP workshop (on campus)
- experience in accelerator components
 - S-band accelerator tubes
 - magnets
 - high power input couplers for SRF cavity (ILC 1.3 GHz, 500 MHz ...)



Press Machine



CMM Machine

Newcomer in SRF cavity

- TESLA single cell and 9-cell cavity as the startup
- facilities for cavity fabrication, welding and annealing



CNC Turning Center



Vertical Machining Center

HERT New EBW Machine and Furnace

EBW Machine

Vacuum chamber: L 3.3m x W 1m x H 1.3m
Voltage: 60 kV, inside equator weld possible
In commissioning



Furnace

High temperature: 1350 C
Working vacuum: 3.0×10^{-3} Pa
In commissioning



Thank you