

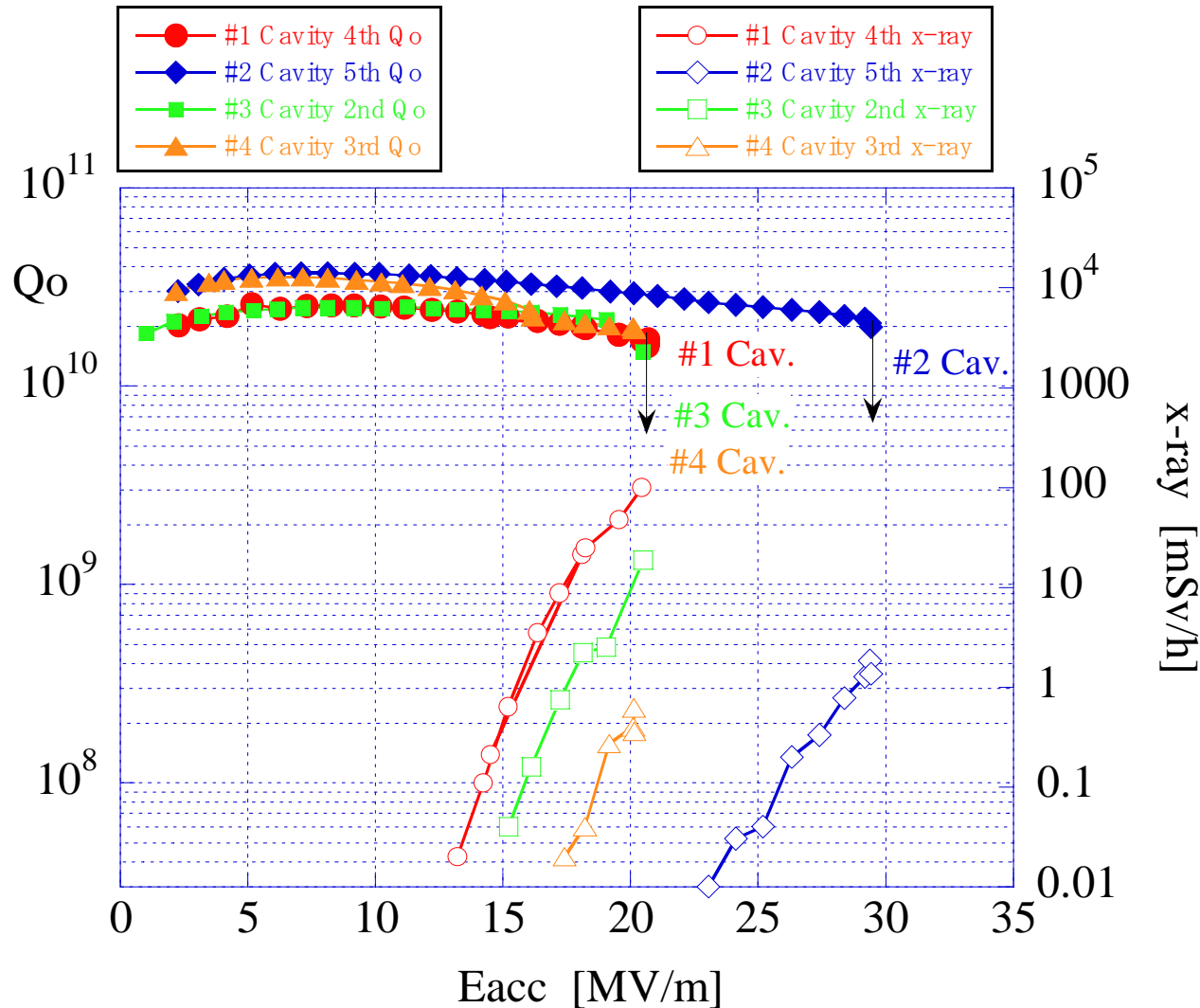
# **Detail discussion of S1 Global at STF**

**H. Hayano (KEK)**

# **Need to be solved for S1 global**

- 1. Cavity package collaboration from FNAL and DESY.**  
need to start negotiation.
- 2. Cavity package installation into Cryostat.**  
installation consideration started.
- 3. Schedule conflict with STF phase 2 and phase 3.**  
tunnel access construction will conflict. -> postpone it.
- 4. Cryogenics cooling power is enough?**  
need to check. (upgrade of 2k heat exchanger and collecting compressor?)
- 5. RF power, distribution, LLRF, cables enough?**  
need to check. Maybe OK.
- 6. KEK Budget and man power support is enough?**  
need to check. Maybe OK.

# TESLA style : Final Performance in Vertical Tests



#2 and #4 Cav.  
additional  
EP (20  $\mu\text{m}$ )  
H<sub>2</sub>O<sub>2</sub> Rinse (1h)  
Hot Rinse (1h)  
HPR (16h)

E<sub>acc,max</sub>  
#1 20.8 MV/m  
#2 29.4 MV/m  
#3 20.5 MV/m  
#4 20.2 MV/m

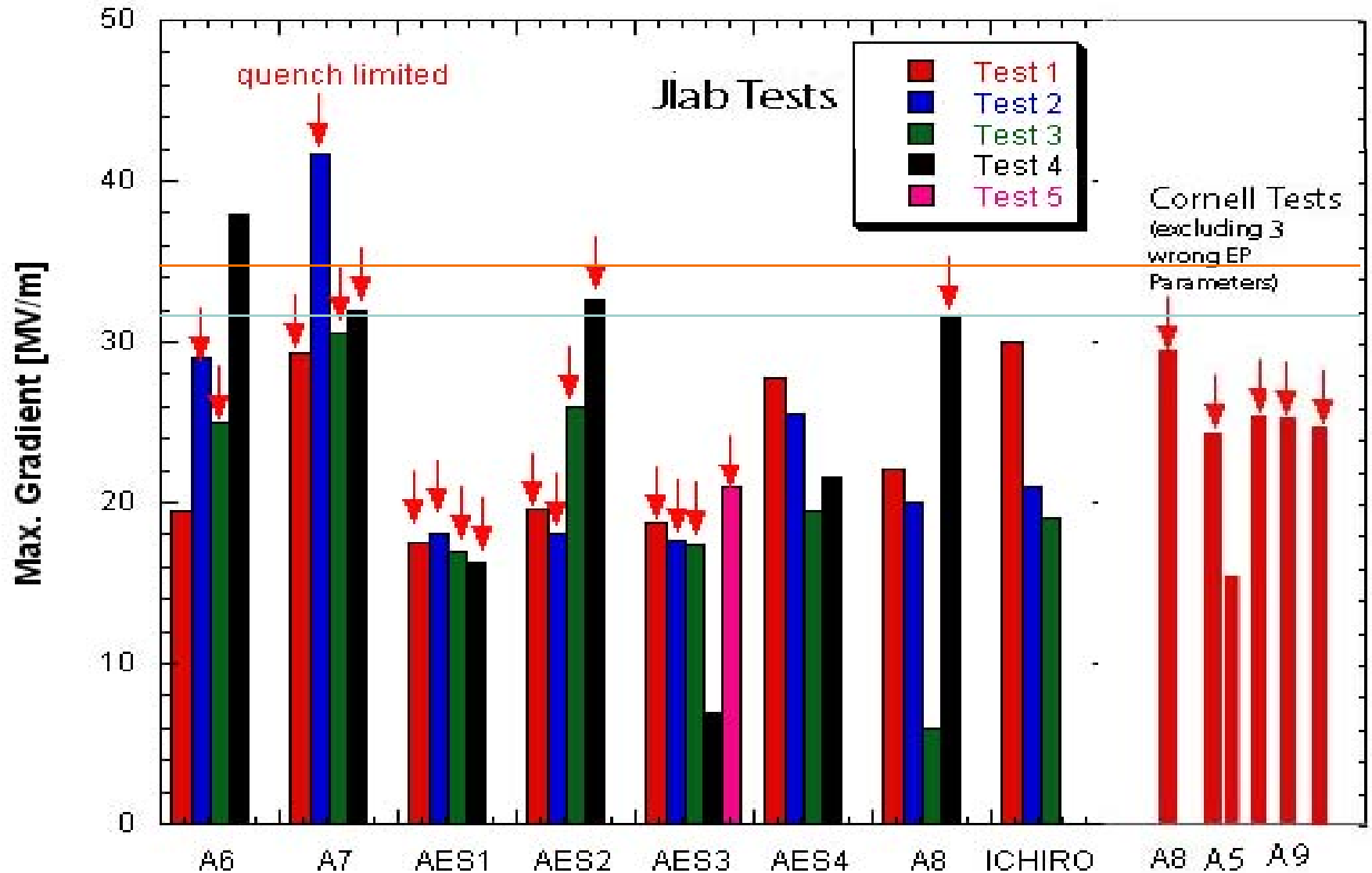
high Qo > 10<sup>10</sup>

**2 TESLA-style cavities (MHI) #5 and #6 are under fabrication with improved EBW, may deliver in April 2008.**

US

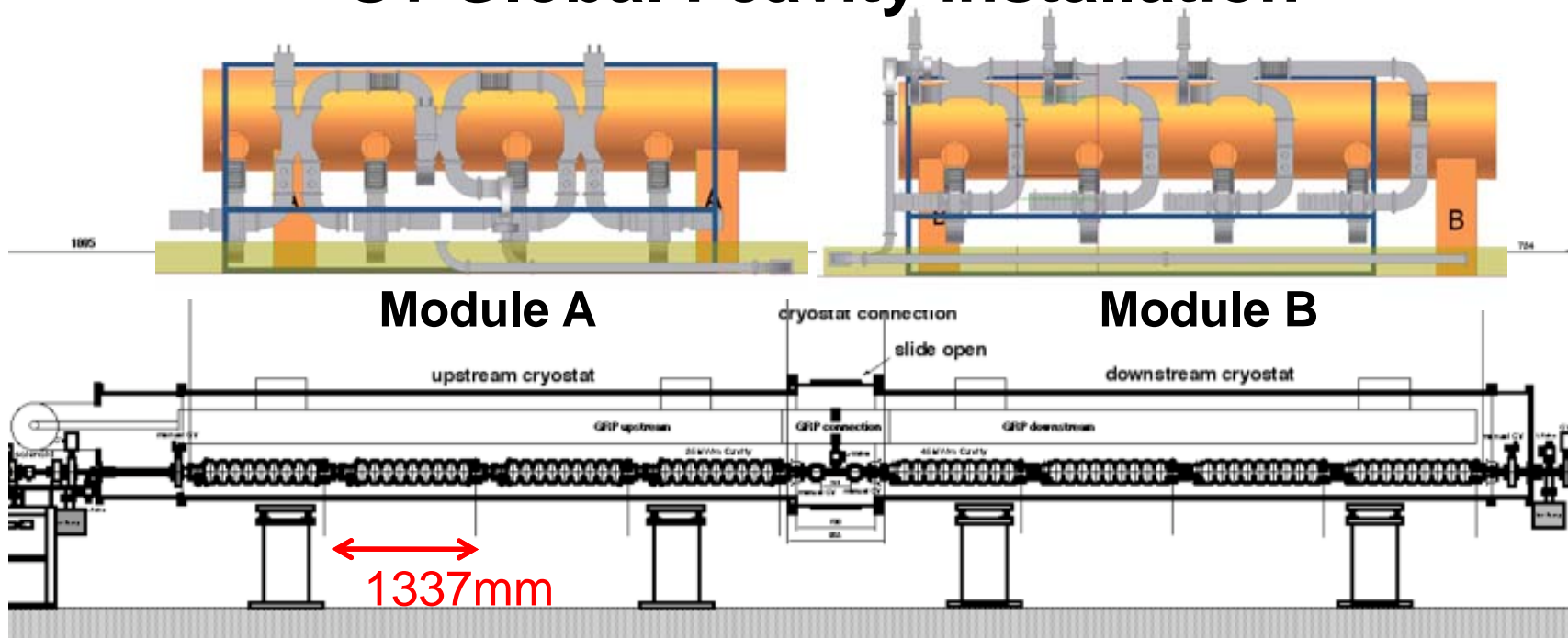
# 9-cell Test Results

Mostly Jlab and Some Cornell



Those go to CM2; candidates will be from new production.

# S1 Global : cavity installation



TESLA-style

<b>STF1</b>	#3	#4	#2	#1
2008.4-10	20MV/m	20MV/m	29MV/m	21MV/m

If we go S1 global for next

**S1 Global**

(DESY or US)	#2	#5	#6
>32MV/m	29MV/m	??MV/m	??MV/m
( or TESLA-style#7?)			

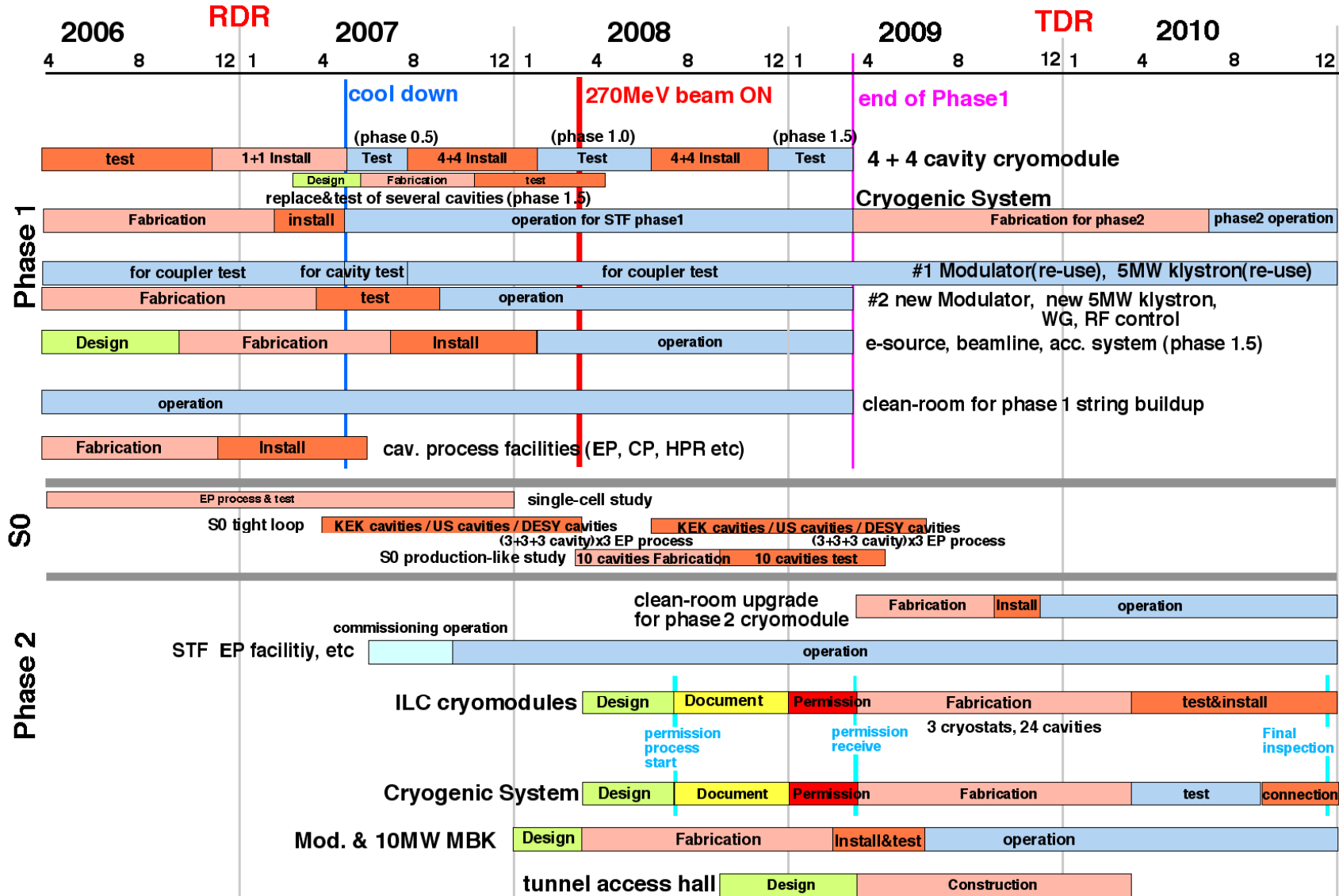
Not yet decided for next

TESLA

DESY1	DESY2	FNAL1	FNAL2
>32MV/m	>32MV/m	>32MV/m	>32MV/m
( or LL #7? #8?)			

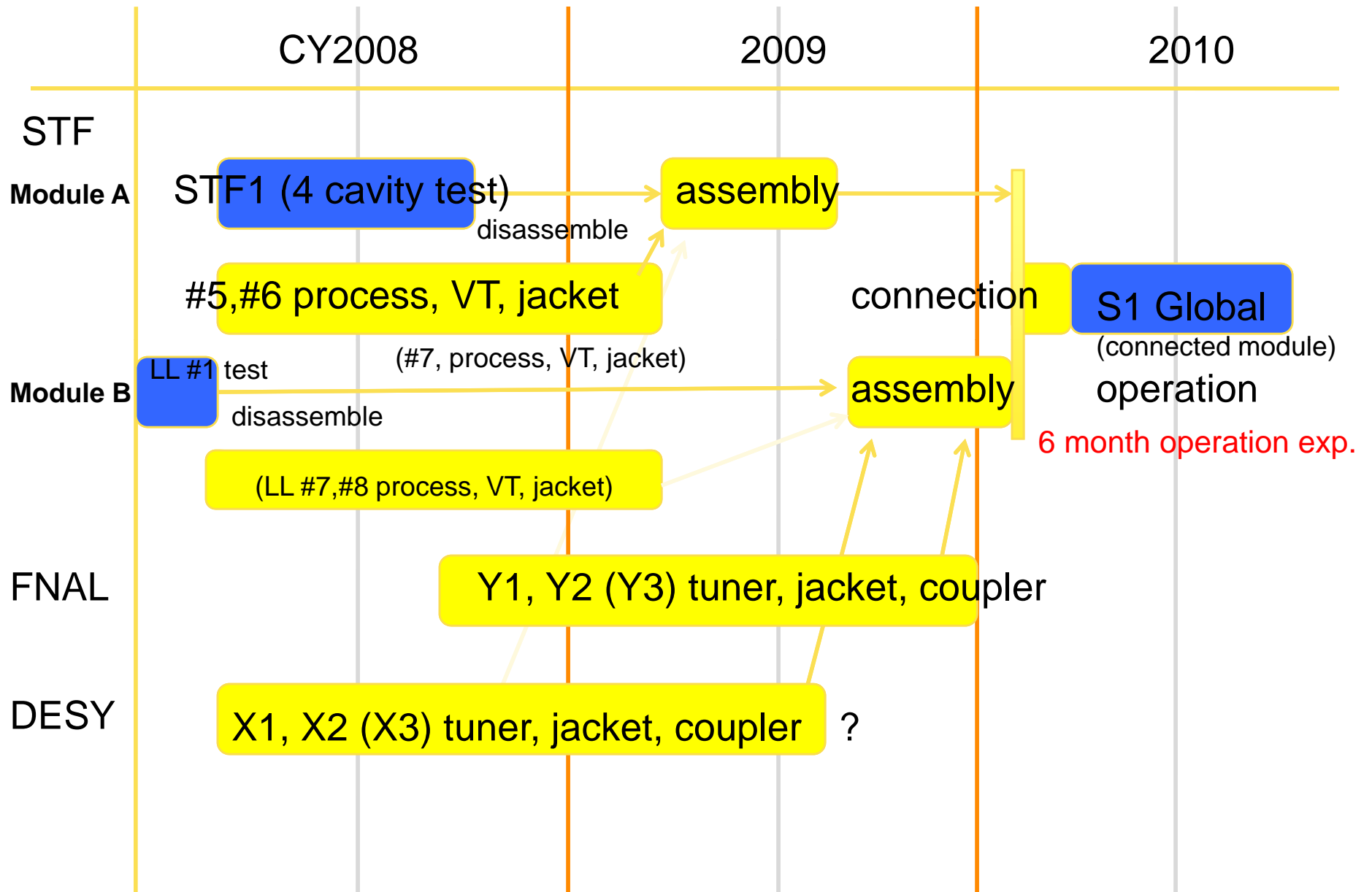
# STF long-term Plan

H. Hayano 04112007

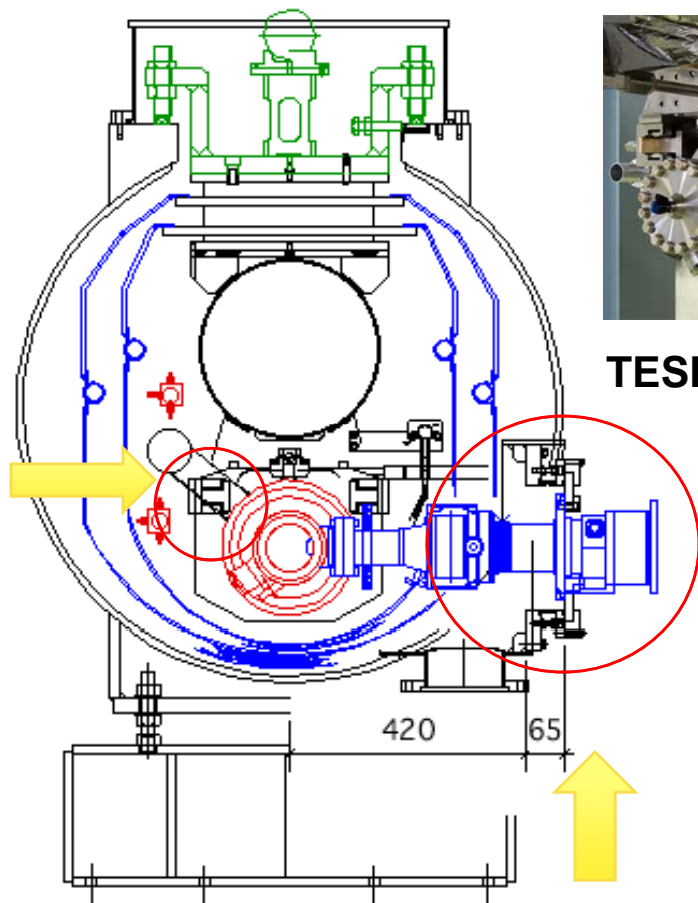


Make this construction 1 year postpone.  
 We can use tunnel until 2010.3, and little more.

# Possible Schedule plans



# Cavity Installation into Cryomodule



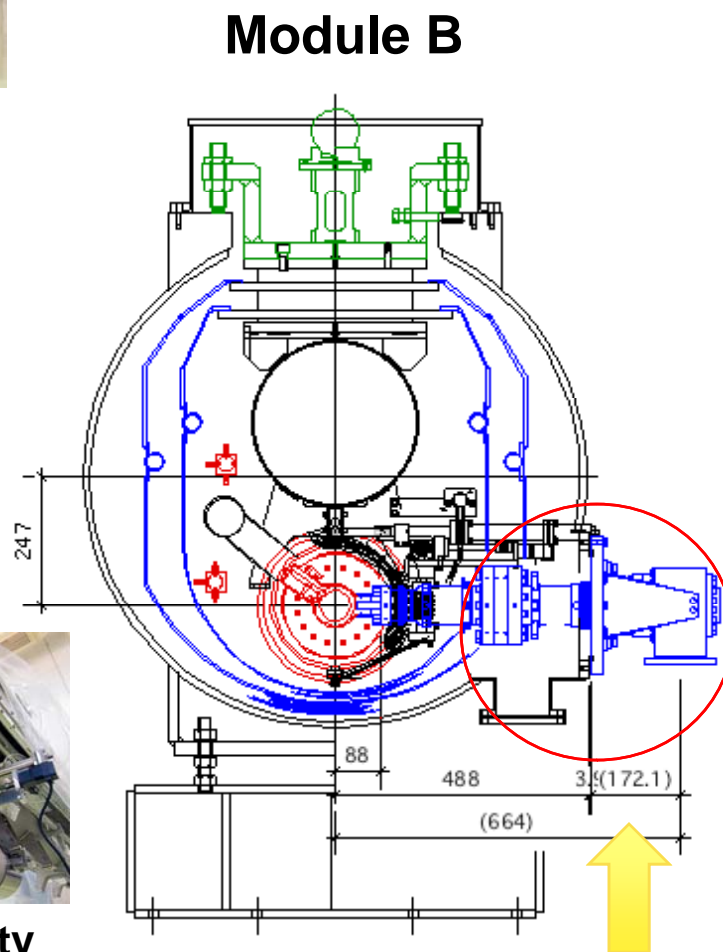
Module A



TESLA-style Cavity

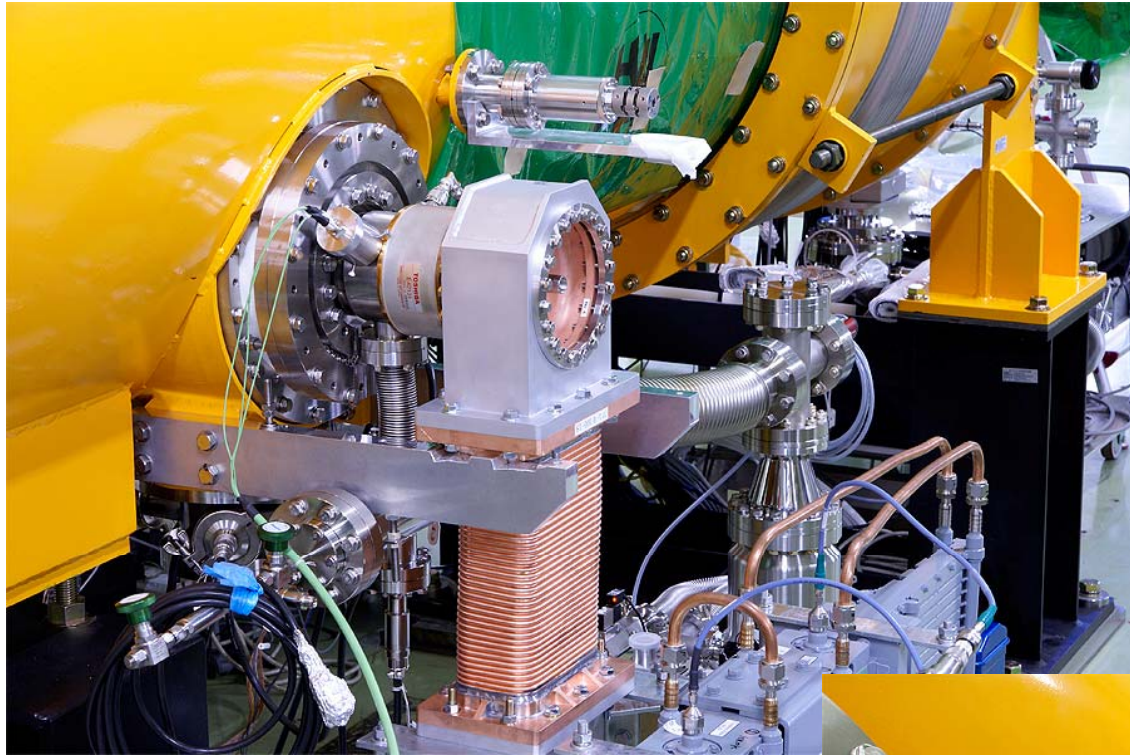


LL type Cavity

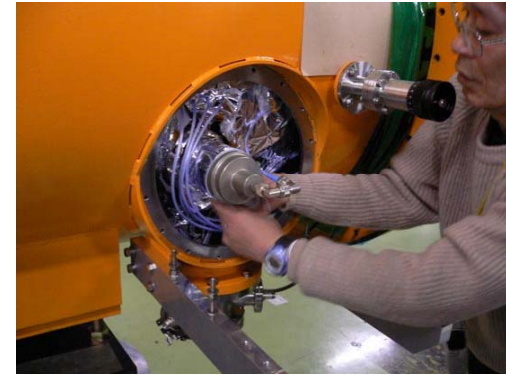


Module B



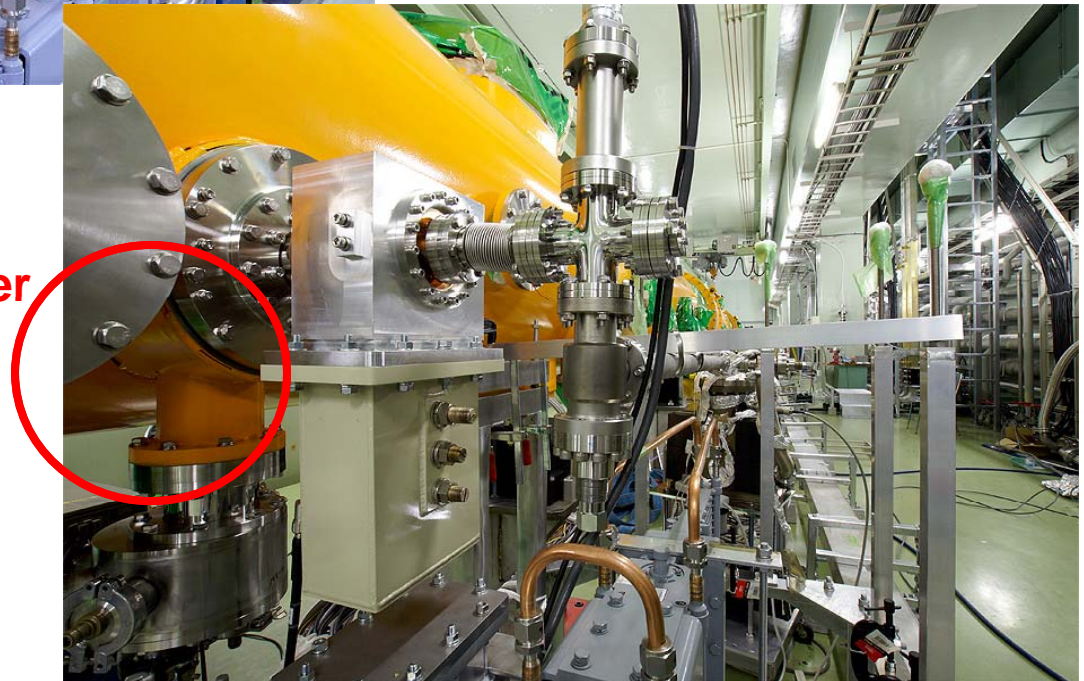


**Module A  
(for TESLA-style)**



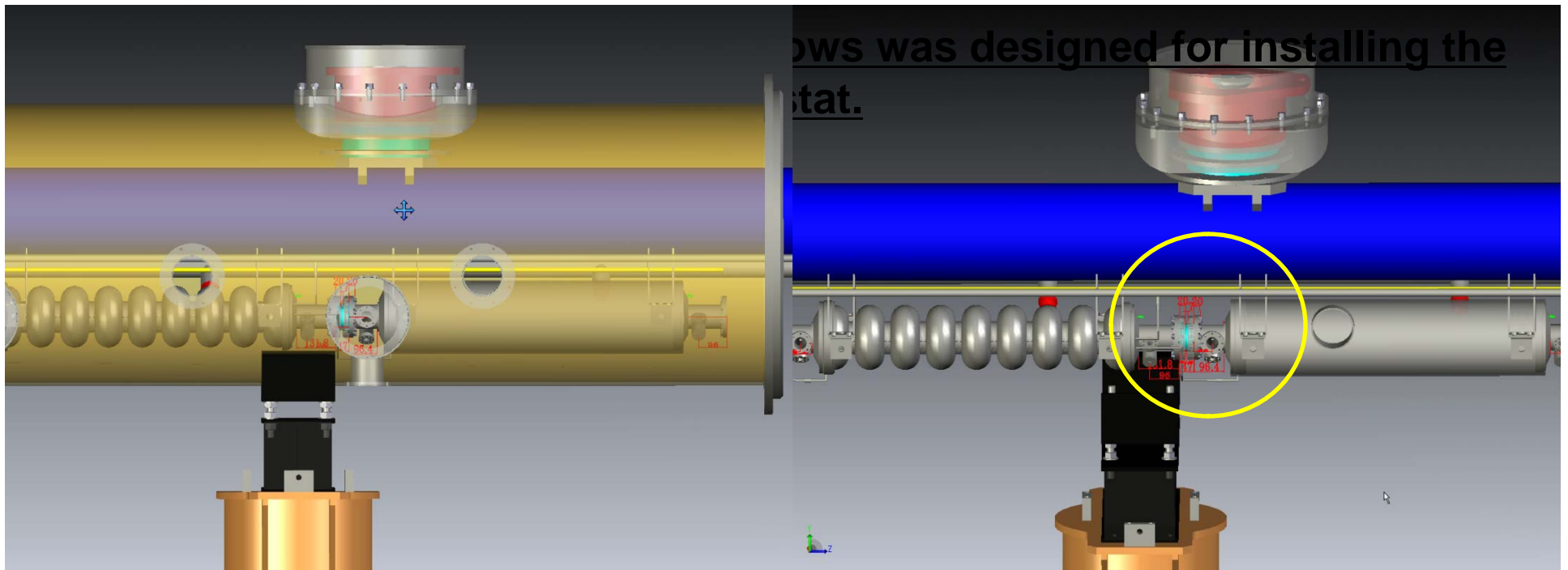
**No coupler assey holder**

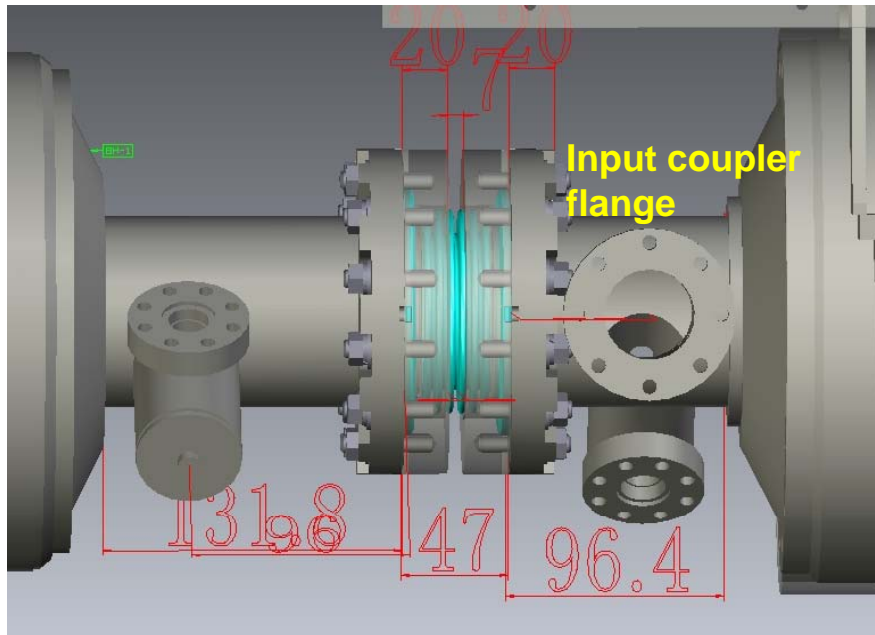
**Module B  
(for LL cavity)  
S1 Global**



# DESY Cavities in STF cryomodule for S1

- The design length between input couplers in the STF cryomodule = **1337mm**
  - Design lengths of the STF cavities = 1258.6 mm for BL cavity, 1272 mm for LL cavity
    - Lengths of connection bellows and flanges: 78.4 mm for BL cavity, 65.0 mm for LL cavity
  - Design length of the DESY cavity = 1293 mm
    - Lengths of three DESY cavities which have been delivered to KEK: 1290, 1290, 1286
    - Length of connection bellows and flanges in STF cryomodule: 43 mm





## Designed Connection Flanges and Bellows

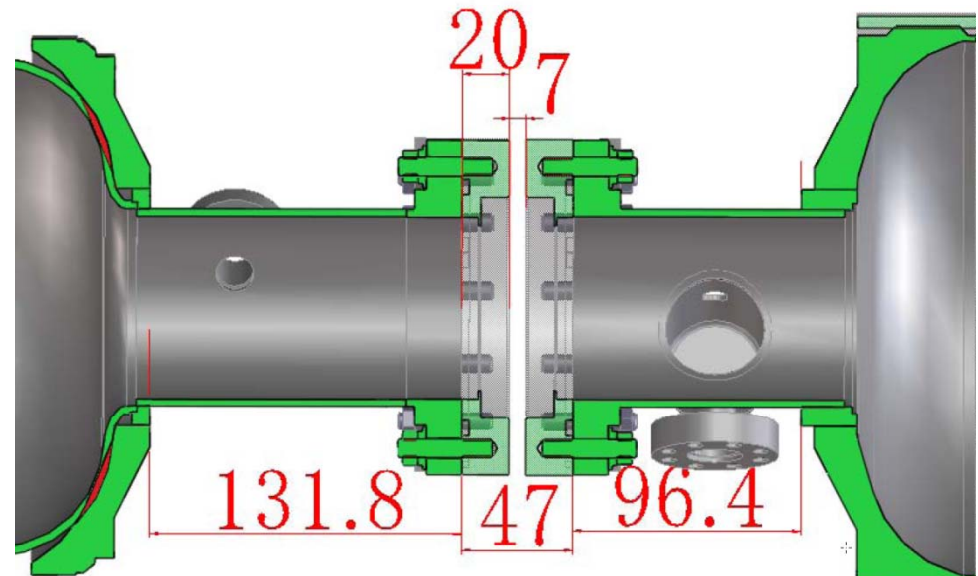
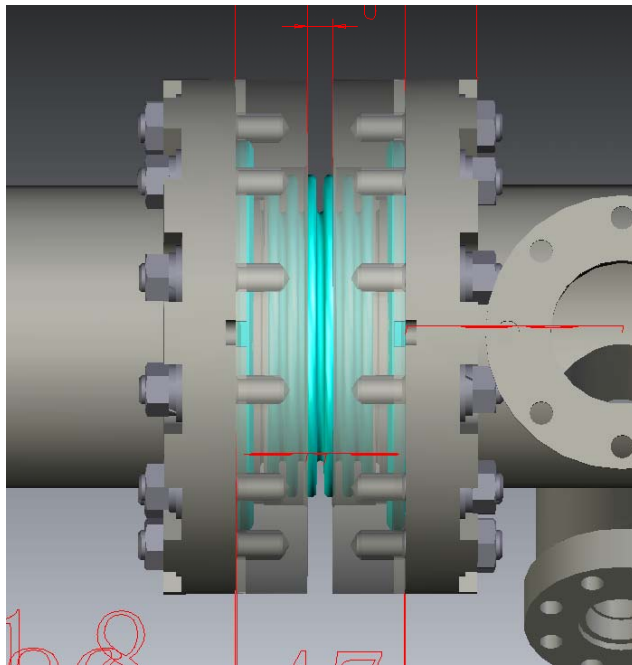
Two flanges with bellows are tapped.

The screwed holes do not penetrate the flanges.

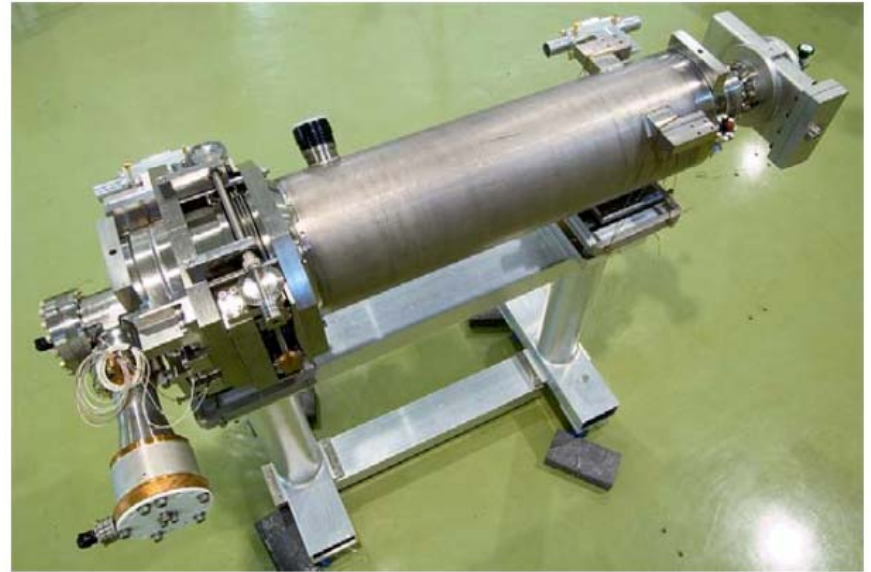
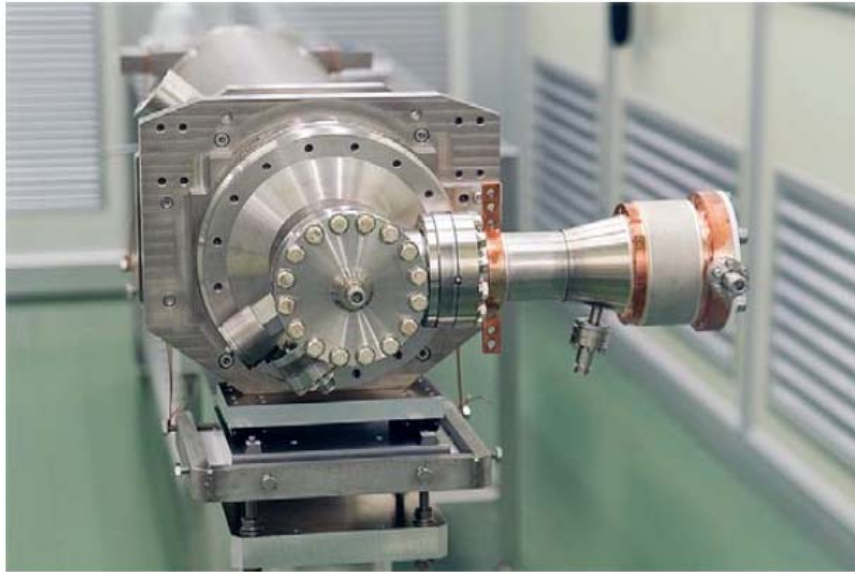
Designed bellow length: 29.1 mm

Number of waves: 6

Changeability of length:  $\pm 2$  mm  
Designed for 1290 mm cavity



## Expected contribution: cavity package



**cavity package: Cavity, Jacket, Tuner, coupler,  
Mag. Shield, HOM pickups,  
monitor pickup,  
coupler installation assembly,  
motor driver, piezo driver, associated instruments.**

**Assembly participation, operation participation.**

**\*Sending them back after experiment.**

*If it is special motor, piezo.*