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# Associated International Laboratory

dapnia  
  
saclay

## France - Japan



## Collaboration Program

### ILC GDE France

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*Bernard Visentin – March 27<sup>th</sup>, 2007*

# 1<sup>st</sup> Work Package

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## R&D on High Gradient Nb Cavities

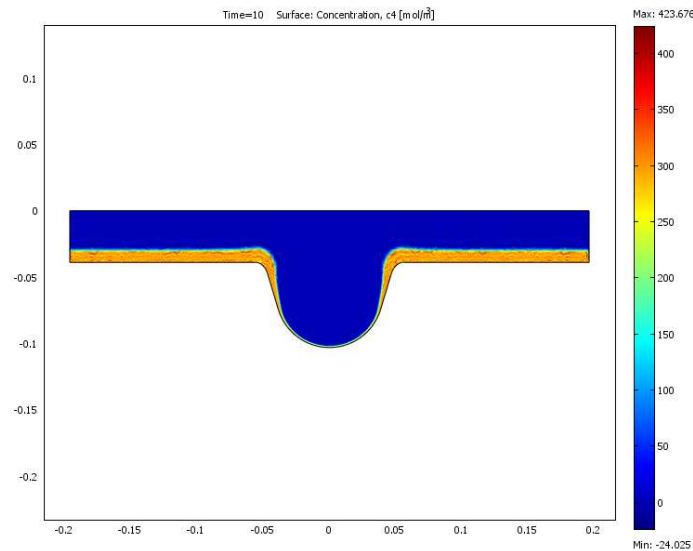
ID: Title	<b>A_RD_4: A common R&amp;D on the High Gradient Nb Cavities</b>					
	French Group			Japanese Group		
Members	Name	Title	Affiliation	Name	Title	Affiliation
	<u>Leader</u> Bernard Visentin		CEA	<u>Leader</u> Kenji Saito		KEK
	Fabien Eozenou		CEA	Takayuki Saeki		KEK
	Melanie Bruchon		CEA	Yasuo Higashi		KEK
	Michel Luong		CEA	Fumio Furuta		KEK
	Guillaume Devanz		CEA	Toshiyasu Higo		KEK

# Electropolishing

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COMSOL code

Iris / Equator: similar attack

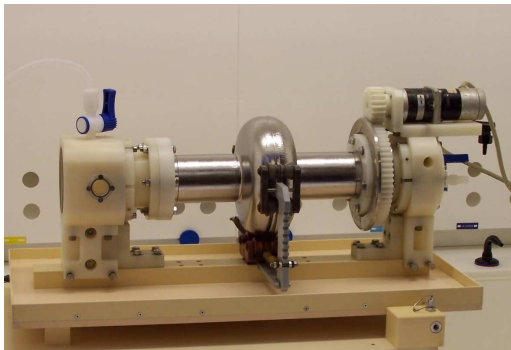
cathode shape ?  
active length ?

comparative studies

between TTF, RE, LL, IC shapes

comparative RF measurements

between TTF and IC shapes

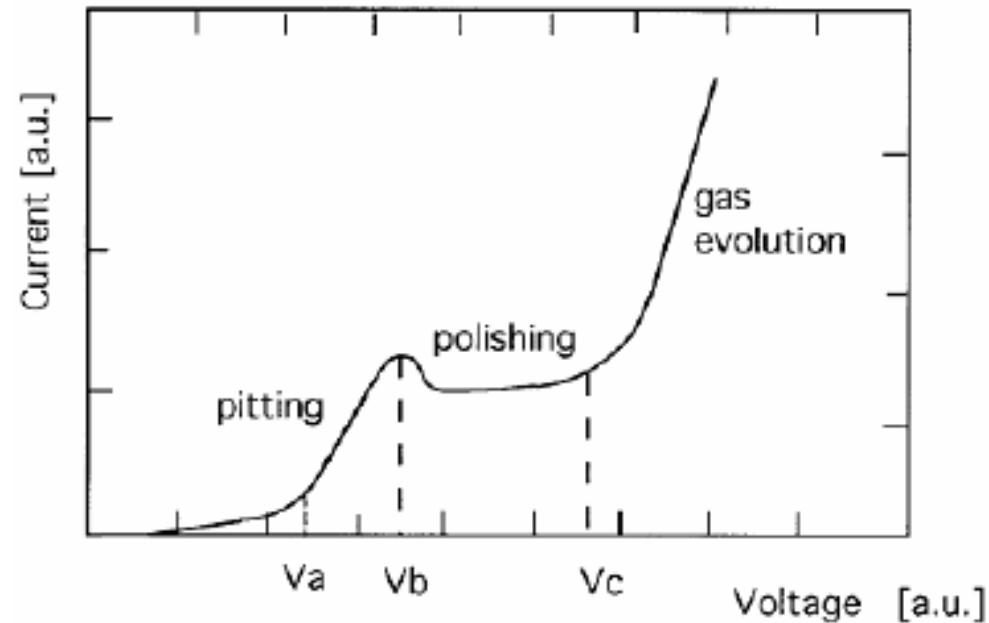


# *Electropolishing (cont.)*

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EP @ Saclay ( V constant )

EP @ KEK ( I constant )

Influence and Comparison on RF test performances

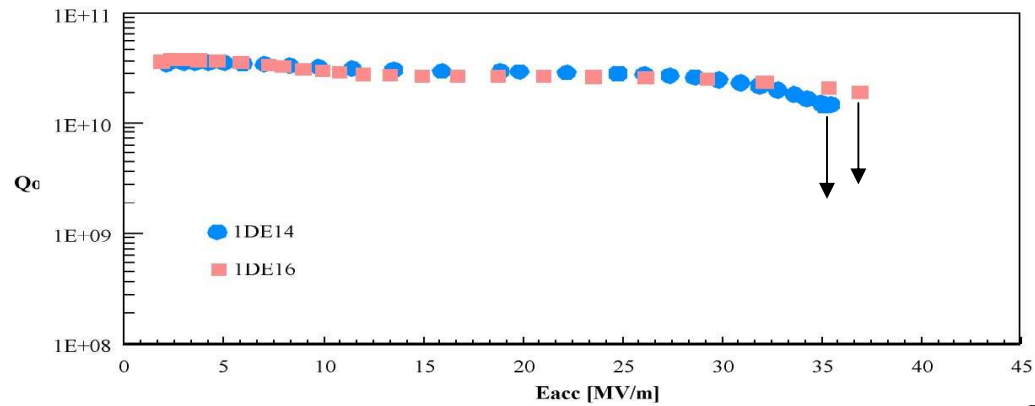
# « Fast Argon » Baking

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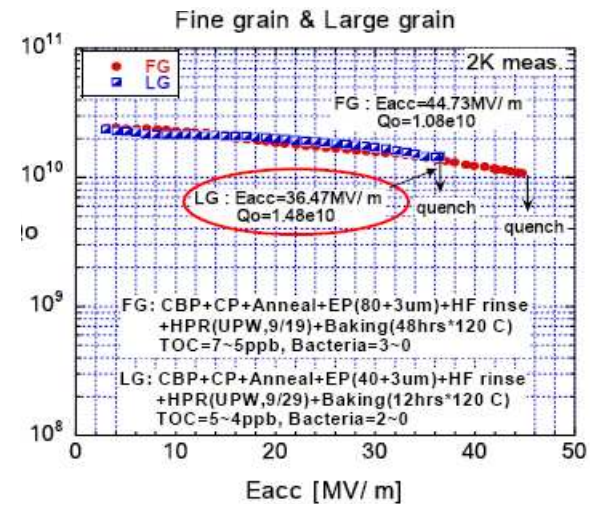


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After similar result at  
between "Fast Argon Baking" 145 °C/3 h  
and "Standard UHV Baking" 120°C/48 h



Efficiency at 50 MV/m ?  
Baking on 1-cell LL Ichiro cavity  
send to Saclay  
for bake and RF test



# Baking - Resistant Cavities

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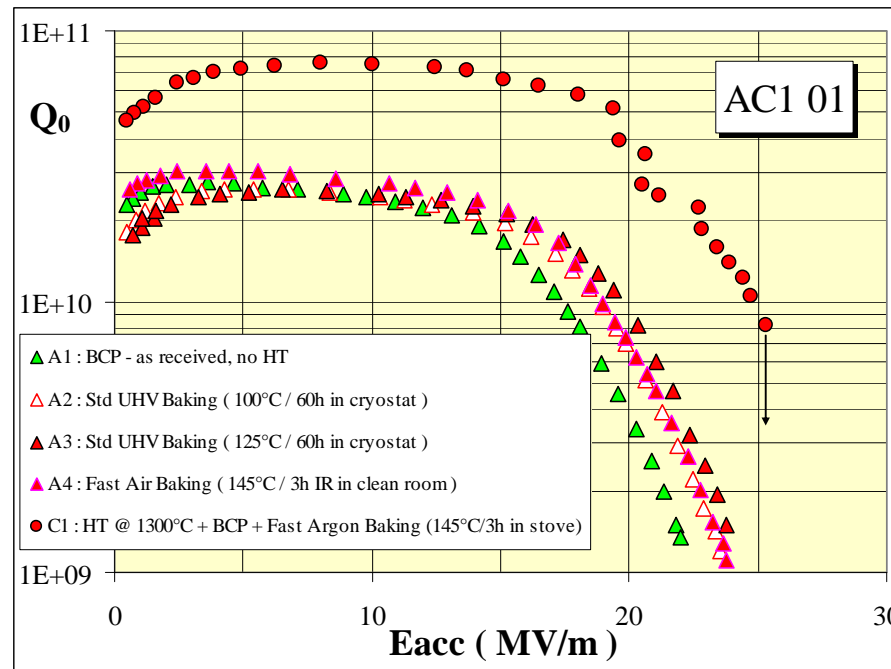
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C1 21 - AC1 01

Barrel Polishing Treatment at KEK (?)

Improvement of RF performances



# Cold Tuning System

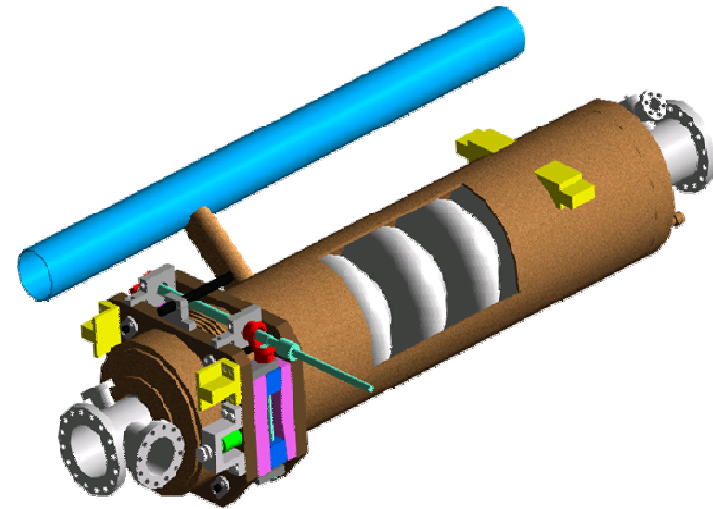
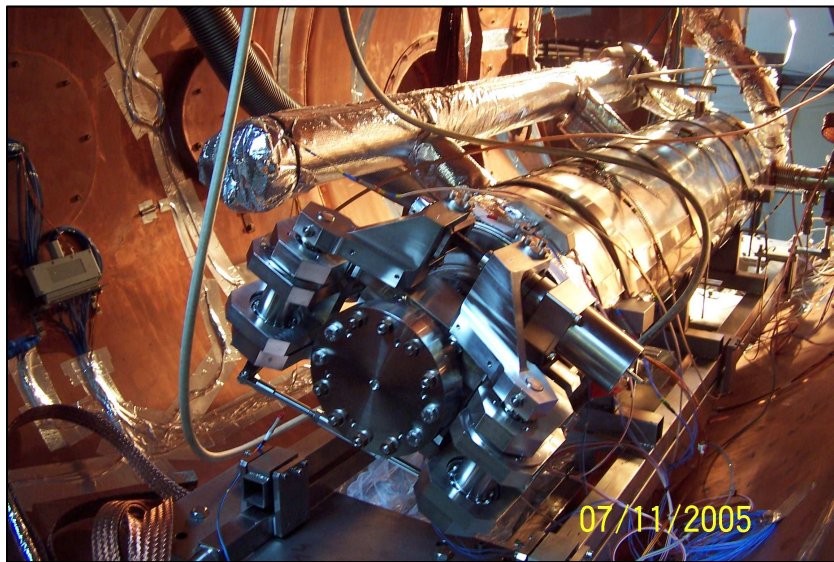
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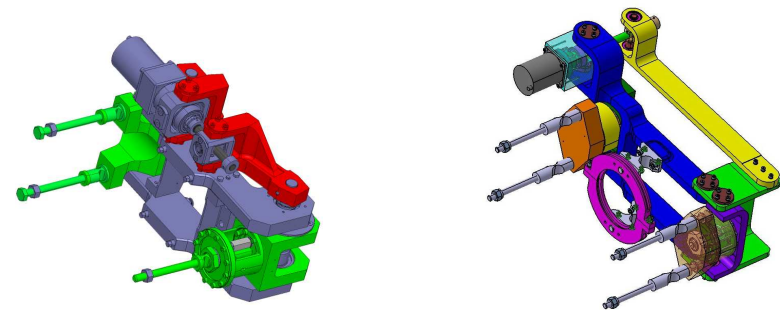
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Compensation of  
Lorentz Force Detuning  
Microphonics Studies

Saclay II Tuner on 9-cell TTF cavity  
(tested in CryHolab)



Saclay Tuners (II or IV)  
on  
9-cell Ichiro cavity  
(Ball Screw Tuner)



# 2<sup>nd</sup> Work Package

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## R&D for ILC cold BPM development

<b>ID: Title</b>	<b><i>A_RD_5</i>: A common R&amp;D for ILC cold BPM development</b>					
<b>Members</b>	<b>French Group</b>			<b>Japanese Group</b>		
	<b>Name</b>	<b>Title</b>	<b>Affiliation</b>	<b>Name</b>	<b>Title</b>	<b>Affiliation</b>
	<u>Leader</u> Olivier Napoly	Dr.	DAPNIA	<u>Leader</u> Hitoshi Hayano	Dr.	KEK
	Michel Luong	Dr.	DAPNIA			
	Nelly Rouvière	Dr.	DAPNIA			
	Claire Simon	Dr.	DAPNIA			



# *Cold Beam Position Monitor*

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## Re-entrant Coaxial Cavity

small length 170 mm - large aperture 78 mm  
beam excites resonant modes  
monopole  $\propto$  beam intensity  
dipole  $\propto$  off axis beam displacement



*Spatial Resolution ( rms )*

8  $\mu\text{m}$  (X) & 4  $\mu\text{m}$  (Y)  
dynamic range : +/- 5 mm

*Time Resolution :*

9.4 ns  
40 ns (cavity + electronics )