

**CERN-LNL-STFC collaboration**  
***third follow-up meeting***

Friday 11 Nov 2016

**LNL Contribution**

## LNL Activity

- Modification of the spinning procedure in order to have a scratch-free internal surface without the need to apply a mechanical treatment by vibrotumbler
- design and construction of a new magnetron sputtering system in order to sputter simultaneously all the cavity in one run (Before we had to move the cavity all over a shorter magnetron).
- implementation of the Kapton flange system for sealing the cavity at liquid helium temperature in order to avoid leaks at the superfluid temperature.
- Improvement of UH Vacuum in the Cryogenic inserts where the cavities are plugged (not yet completed)
- Maintenance and service of the RF bench (expected to be completed for December 2016)

about cavities we have done the following:

- **WE HAVE USED 11 CAVITIES,**
  - on them we have done 13 different depositions
  - of these 13 depositions, 5 cavities were not measured because of film peeling or other problems
  - the remaining 7 cavities were measured at 4.2 K. and at 1,8 K.
  - The rf performances we got on these last cavities were always improving
  - We plan to measure more cavities in the next months

# Results

#	Thickness ( $\mu\text{m}$ )	$P_{\text{Ar}}$ (mbar)	$\text{N}_2$ HT Venting	$Q_0$	$E_{\text{acc}}$ (MV/m)
1	130	$5 \cdot 10^{-2}$	No	$4,0 \cdot 10^7$	0,7
2	40	$5 \cdot 10^{-2}$	Yes	delaminated	
3	40	$5 \cdot 10^{-2}$	Yes	delaminated	
4	40	$7 \cdot 10^{-3}$	Yes	Waiting for measurement	
5	40	$5 \cdot 10^{-2}$	Yes	$4,4 \cdot 10^8$	4,2
6	40	$7 \cdot 10^{-3}$	Yes	$4,9 \cdot 10^8$	4,4
7	100	$7 \cdot 10^{-3}$	Yes	$1,7 \cdot 10^7$	0,3
8	2	$5 \cdot 10^{-2}$	No	delaminated	
9	100	$7 \cdot 10^{-3}$	No	$2,0 \cdot 10^9$	4,3
10	60	$5 \cdot 10^{-2}$	No	delaminated	
11	60	$5 \cdot 10^{-2}$	No	Waiting for measurement	
3,1	100	$7 \cdot 10^{-3}$	No	$5,9 \cdot 10^8$	6,9
5,1	40	$5 \cdot 10^{-2}$	No	$2,0 \cdot 10^9$	3,1

For all cavities, deposition Temperature = 550 °C

# Samples characterization

- Thickness
- Temperature
- Pressure
- Multilayers