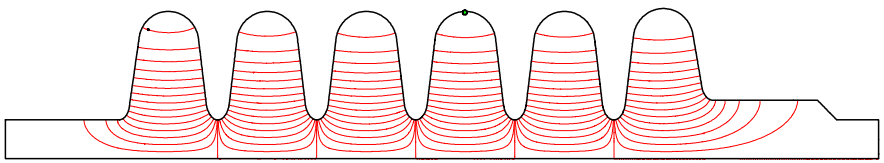
The β_g = 0.61 Cavity for SNS – 4 dies

Effective β that matches the TTF curve = 0.630

E_p/E_{acc}	2.72 (2.63 inner cell)
B_p/E_{acc} [mT/(MV/m)]	5.73 (5.44 inner cell)
R/Q [Ω]	279
G [Ω]	214
k [%]	1.53
Q_{BCS} @ 2 K [10^9]	27.8
Frequency [MHz]	805.000
Field Flatness [%]	2



KL70 = -2.9 [Hz/(MV/m)^2] KL80 = -3.4 [Hz/(MV/m)^2]

Nb thickness = 3.8 mm

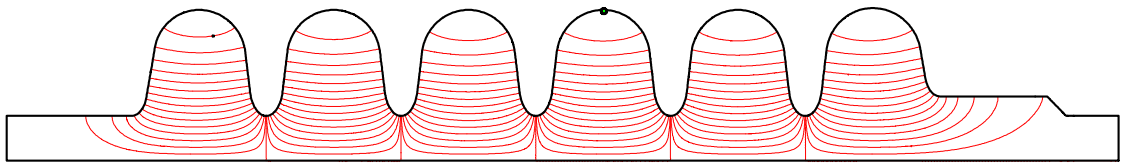
Geometrical Parameters

	Inner cell	End Cell Left	End Group (coupler) Left	End Group (coupler) Right
L [mm]	**56.8**	**56.8**	**56.8**	
R_{iris} [mm]	**43.0**	**43.0**	**43.0**	**65.0**
D [mm]	**163.76**	**163.76**	**166.98**	
d [mm]	**11.0**	**11.0**	**11.0**	**10.0**
r	**1.7**	**1.5**	**1.7**	**1.5**
R	**1.0**	**1.0**	**1.0**	
α [deg]	**7.0**	**8.36**	**7.0**	**10.0**

The β_g = 0.81 Cavity for SNS – 4 dies

Effective β that matches the TTF curve = 0.810

E_p/E_{acc}	2.19 (2.14 inner cell)
B_p/E_{acc} [mT/(MV/m)]	4.79 (4.58 inner cell)
R/Q [Ω]	484.8
G [Ω]	233
k [%]	1.52
Q_{BCS} @ 2 K [10^9]	36.2
Frequency [MHz]	805.004
Field Flatness [%]	1.1



KL70 = -0.7 [Hz/(MV/m)^2] KL80 = -0.8 [Hz/(MV/m)^2]

Nb thickness = 3.8 mm

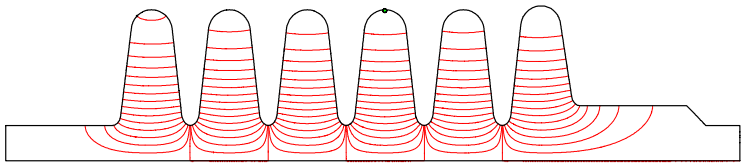
Geometrical Parameters

	Inner cell	End Cell Left	End Group (coupler) Left	End Group (coupler) Right
L [mm]	**75.5**	**75.5**	**75.5**	
R_{iris} [mm]	**48.8**	**48.8**	**48.8**	**70.0**
D [mm]	**164.15**	**164.15**	**166.11**	
d [mm]	**15.0**	**13.0**	**15.0**	**13.0**
r	**1.8**	**1.6**	**1.8**	**1.6**
R	**1.0**	**1.0**	**1.0**	
α [deg]	**7.0**	**10.072**	**7.0**	**10.0**

The Proposed β_g = 0.47 Cavity for RIA – 4 dies

Effective β that matches the TTF curve = 0.488

E_p/E_{acc}	3.41 (3.26 inner cell)
B_p/E_{acc} [mT/(MV/m)]	6.92 (6.47 inner cell)
R/Q [Ω]	160
G [Ω]	137
k [%]	1.50
Q_{BCS} @ 2 K [10^9]	21.2
Frequency [MHz]	805.006
Field Flatness [%]	1.8



KL70 = -3.3 [Hz/(MV/m)^2]
KL70 = -1.8 [Hz/(MV/m)^2]

KL80 = -3.3 [Hz/(MV/m)^2]
KL80 = -1.8 [Hz/(MV/m)^2]

Nb thickness = 4.8 mm
Nb thickness = 6.15mm

Geometrical Parameters

	Inner cell	End Cell Left	End Group (coupler) Left	End Group (coupler) Right
L [mm]	**43.9**	**43.9**	**43.9**	
R_{iris} [mm]	**38.6**	**38.6**	**38.6**	**60.0**
D [mm]	**164.56**	**164.56**	**168.84**	
d [mm]	**8.5**	**8.0**	**8.5**	**8.0**
r	**1.45**	**1.3**	**1.45**	**1.3**
R	**1.0**	**1.0**	**1.0**	
α [deg]	**6.5**	**7.2**	**6.5**	**9.0**