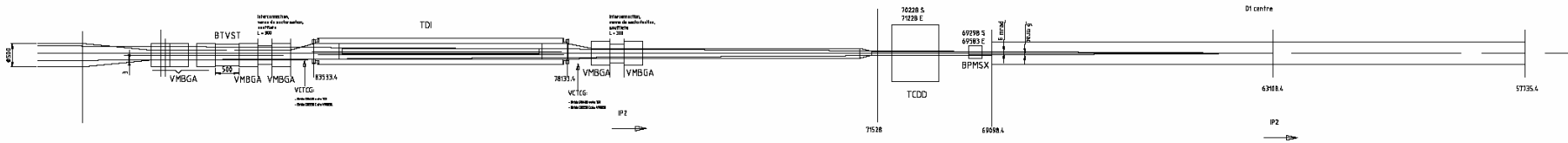
First results on the simulation of trapped modes in TDI

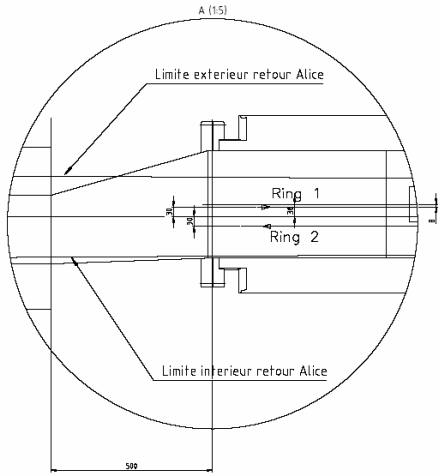
A.Grudiev

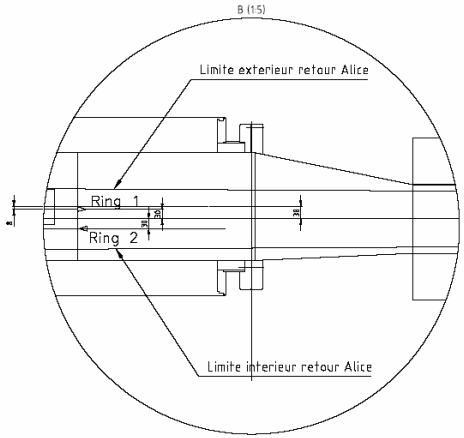
RLC meeting

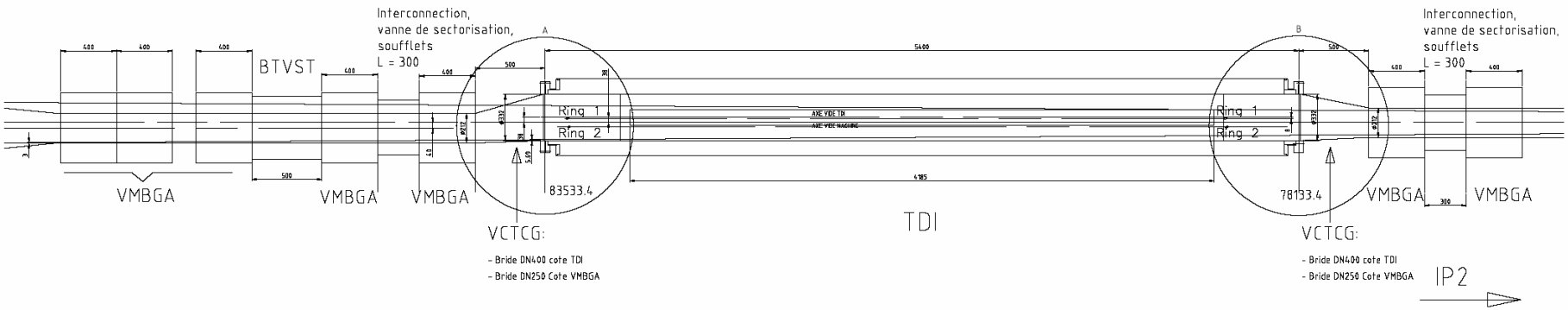
22.04.05

General layout









LHC Beam Absorber for Injection, Internal

INTEGRATION IR2
FROM IP TO TDI
INTEGRATION IR2
DE L'IP AU TDI

SCALE 1:30
1:10

LHCTDI_0121

RELEASED BY PROJECT ENGINEER

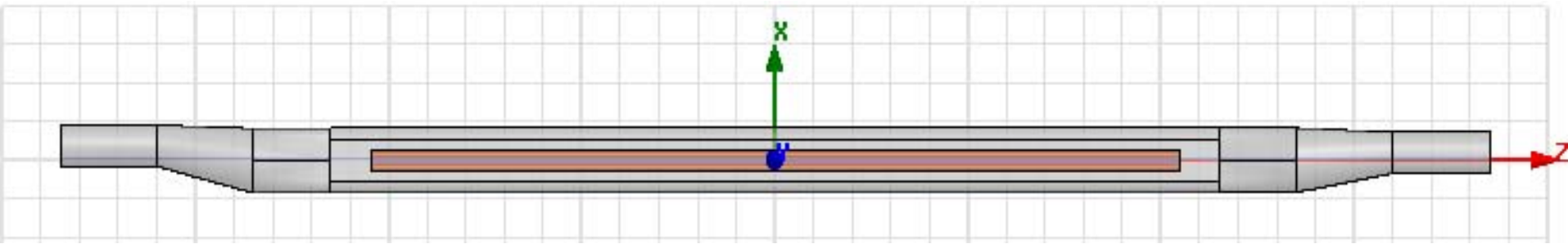
PDH INFORMATION

LHCTDI__0121

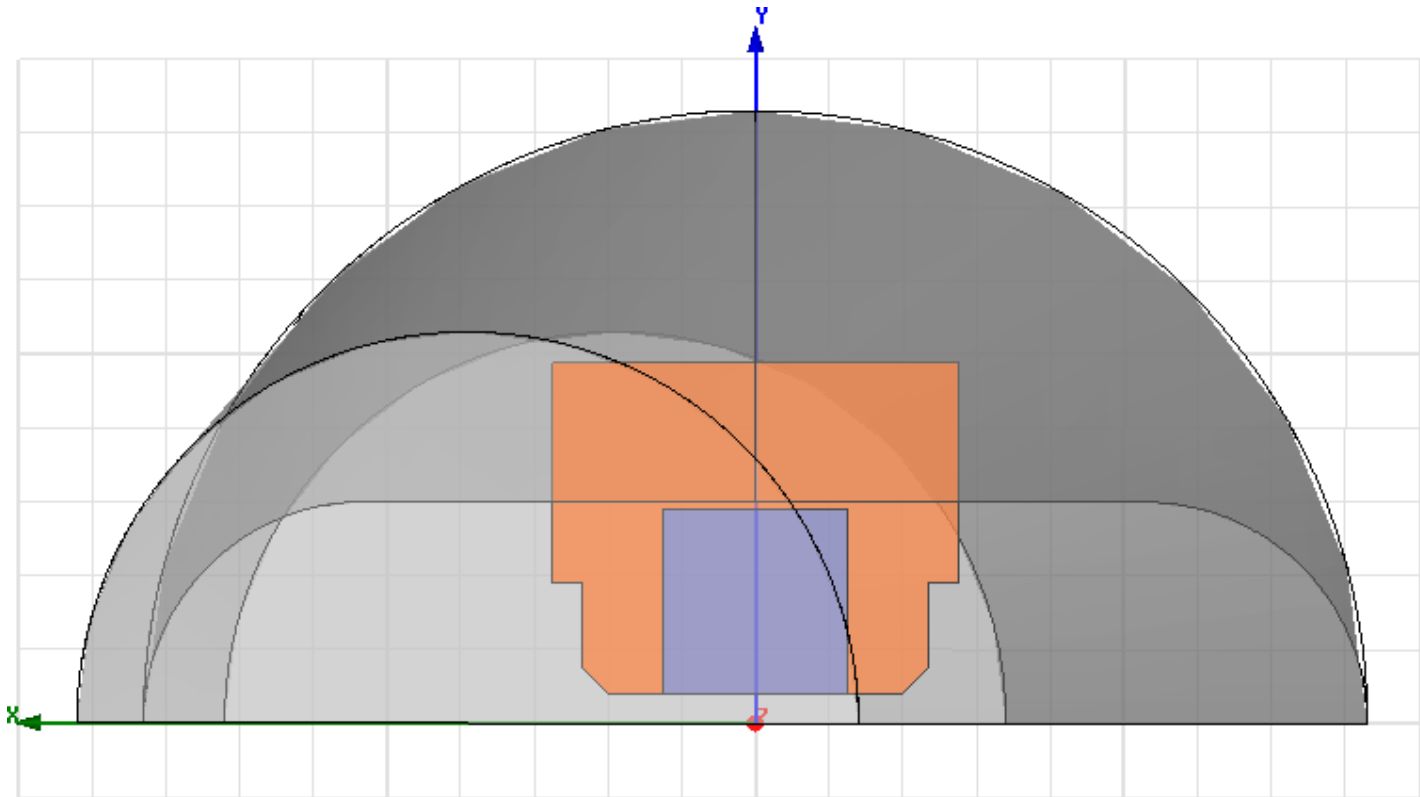
REV. 0

HFSS model

Top view

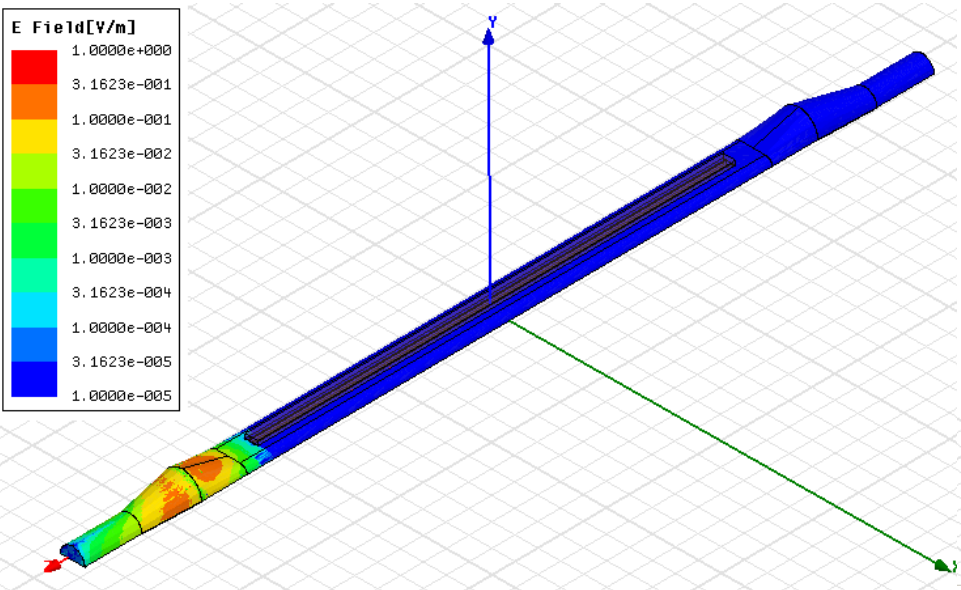


Side view

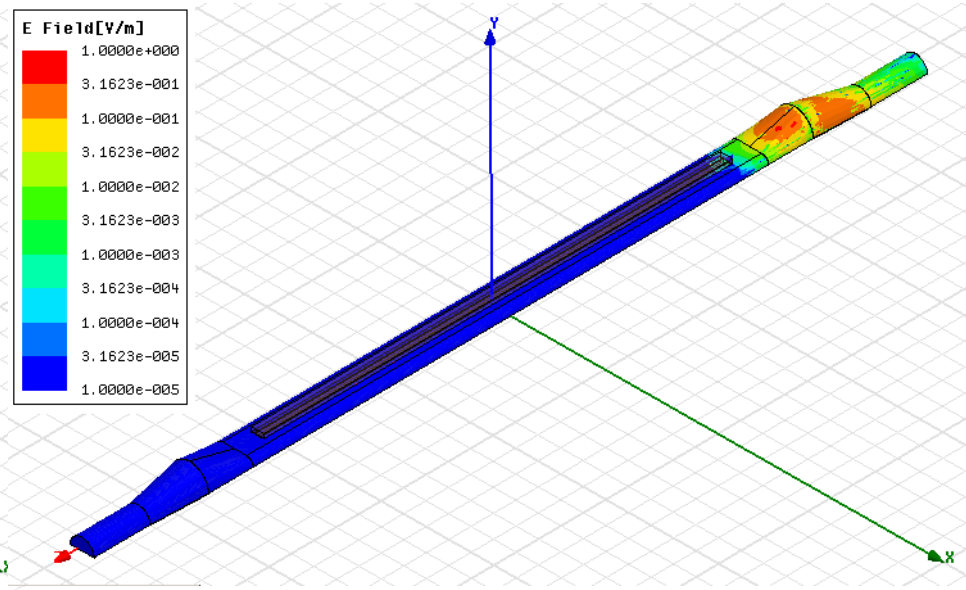


Transition region trapped modes

Mode 1



Mode 2



q=16nC, t_b=25ns

f = 0.767 GHz
Q = 59700
r/Q = 1.04 LinacOhm
K_δ = 1.25 V/nC
If f = 0.76 GHz = $19/t_b$
$P_{loss} = (q/t_b)^2 e^{-(\omega\sigma_z/c)^2} r/Q*Q$ = 5kW

f = 0.769 GHz
Q = 58800
r/Q = 0.77 LinacOhm
K_δ = 0.93 V/nC
If f = 0.76 GHz = $19/t_b$
$P_{loss} = (q/t_b)^2 e^{-(\omega\sigma_z/c)^2} r/Q*Q$ = 3.7kW