

# Basic Parameters, Recap

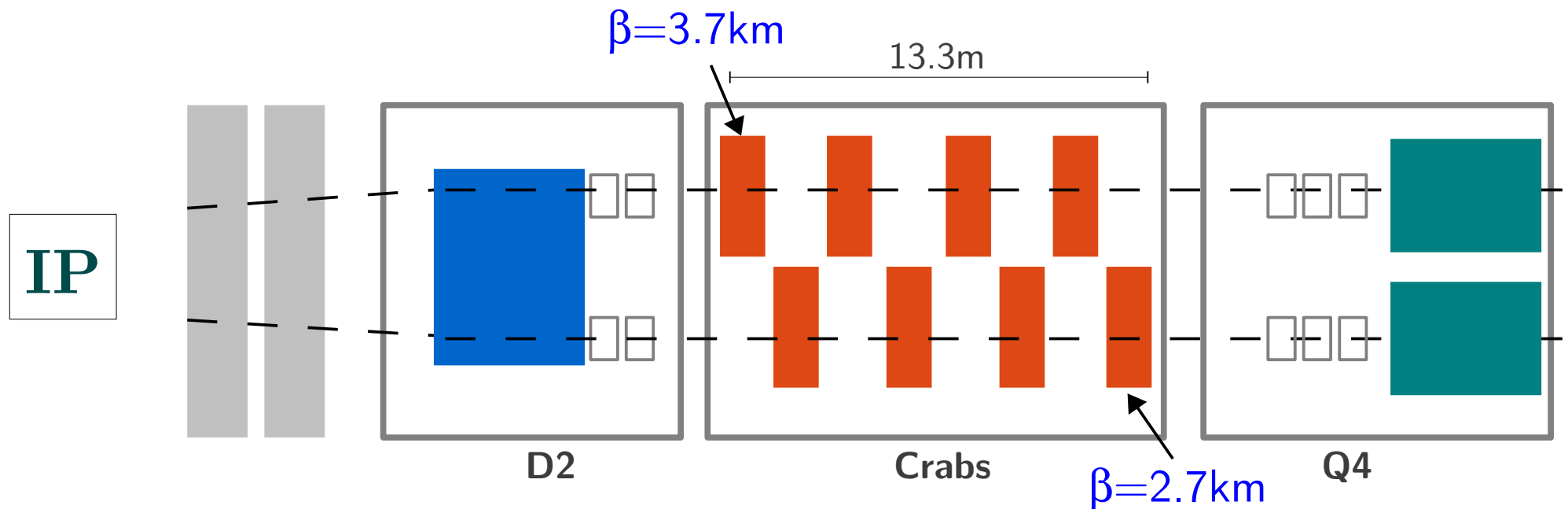
R. Calaga, April 29 2014  
PLC Meeting

Voltage = 3.4 MV/cavity (4 cavities /module)

Frequency = 400.079 MHz (h=35640)

$Q_{ext} = 5 \times 10^5$  (Assuming  $R/Q=400\Omega$ )

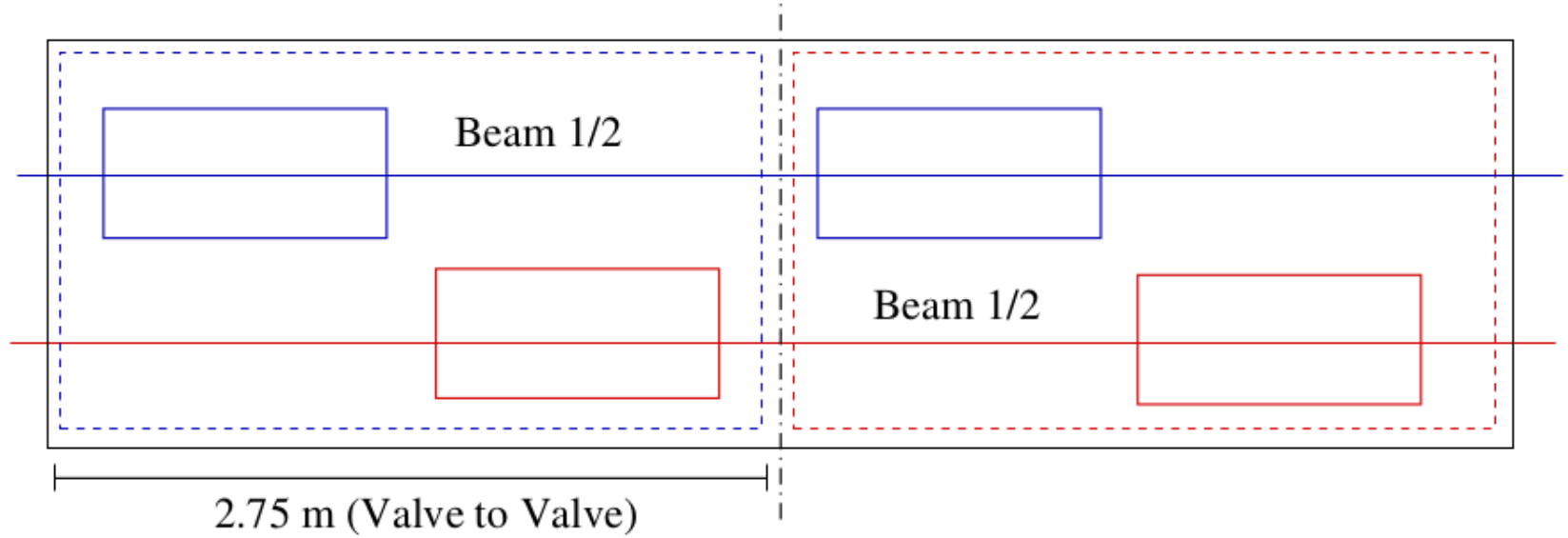
RF power source = 80 kW (assuming x2 margin)



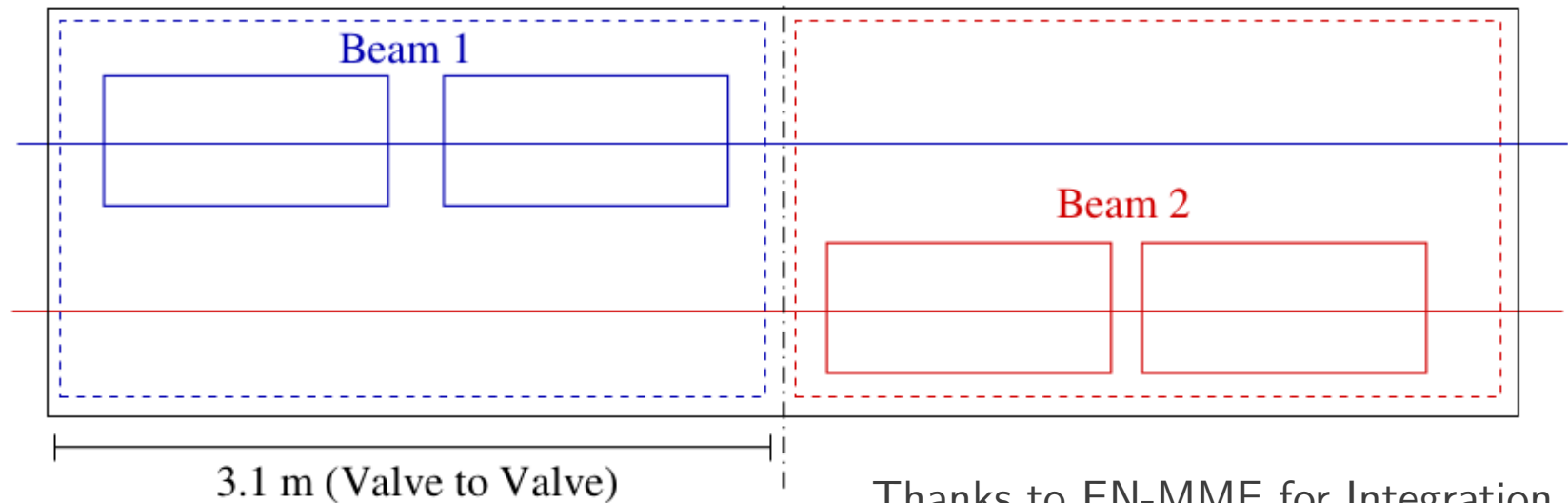
# LHC Layout Options

Difference in voltage  $< 3\%$  per cavity  
(use same voltage for all cavities de Maria)

Baseline



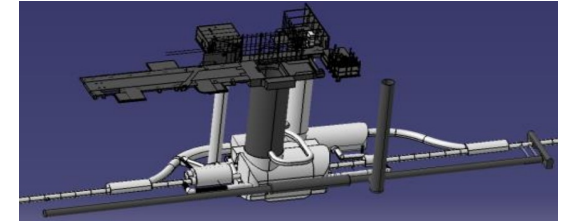
SPS-Type  
Cryomodule  
(Preferred)



Thanks to EN-MME for Integration  
(vacuum discussions ongoing)

# LHC Layout Options

P. Fessia et al.

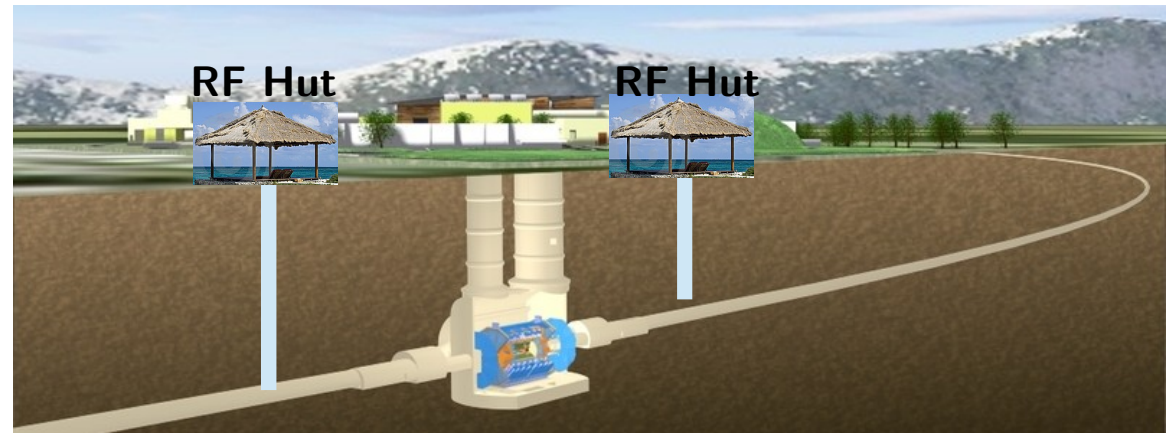


- Option I: Underground caverns on both sides of IP (not cheap)
- Option II: RR-caverns (not preferred, maybe not possible)

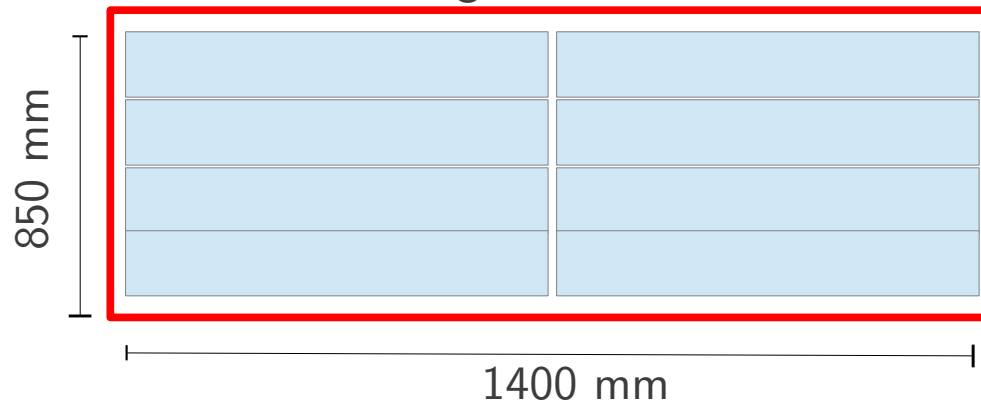
Option III: Smaller waveguide cores (similar study done for RR's by J. Osborne et al.)

Round trip delay time is acceptable

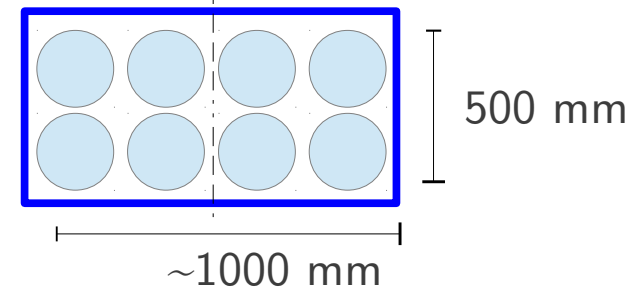
- ~80m deep at Point 1
- ~90m deep at Point 5



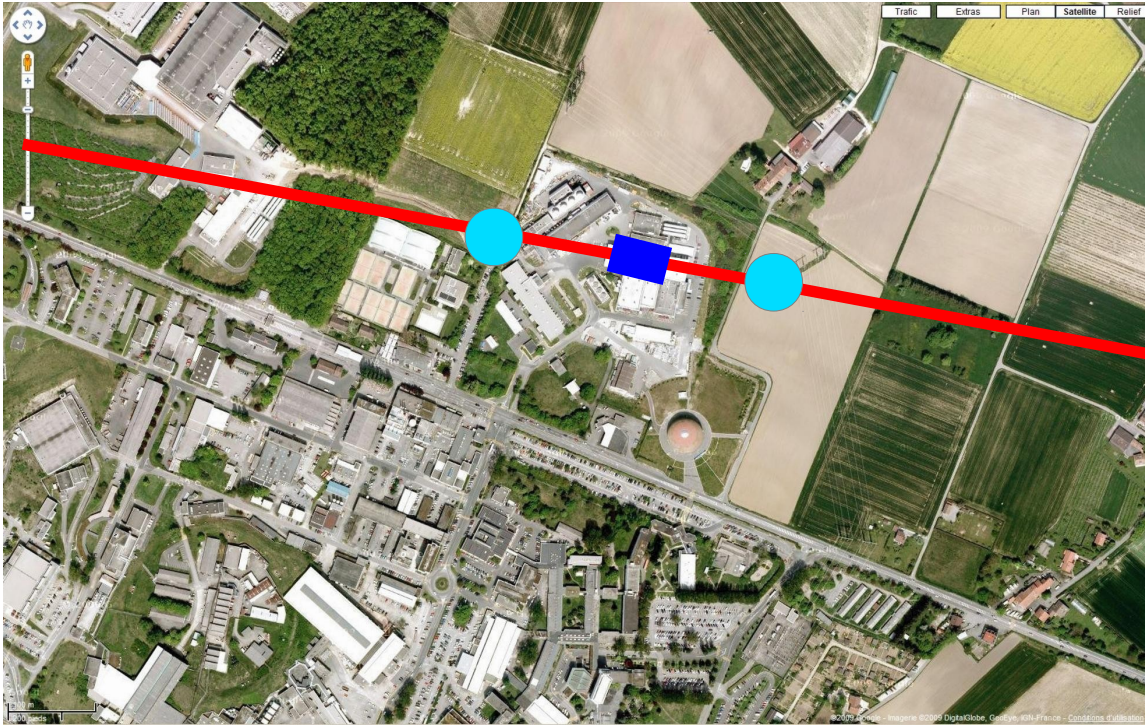
Waveguide-Solution



Coaxial-Solution

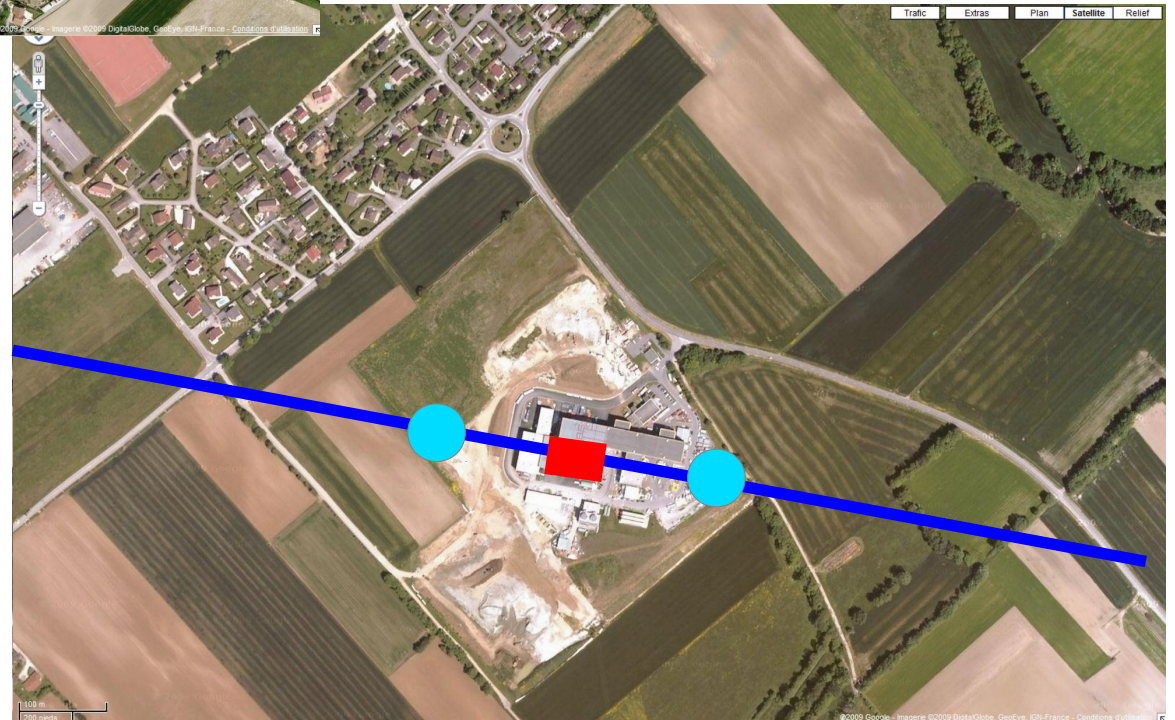


# Point 1



Need 4 surface bldg. to host RF Power & LLRF

# Point 5



Estimate performed by Osborne et al. in 2010 was ~10 MCHF including surface bldgs. (diameter ~40cm)

Will need 2 cores/side with coaxial lines, waveguides more difficult