

# **BPM projects**

# **Status and outlook**

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# The BPM systems

## Just commissioned or in design phase

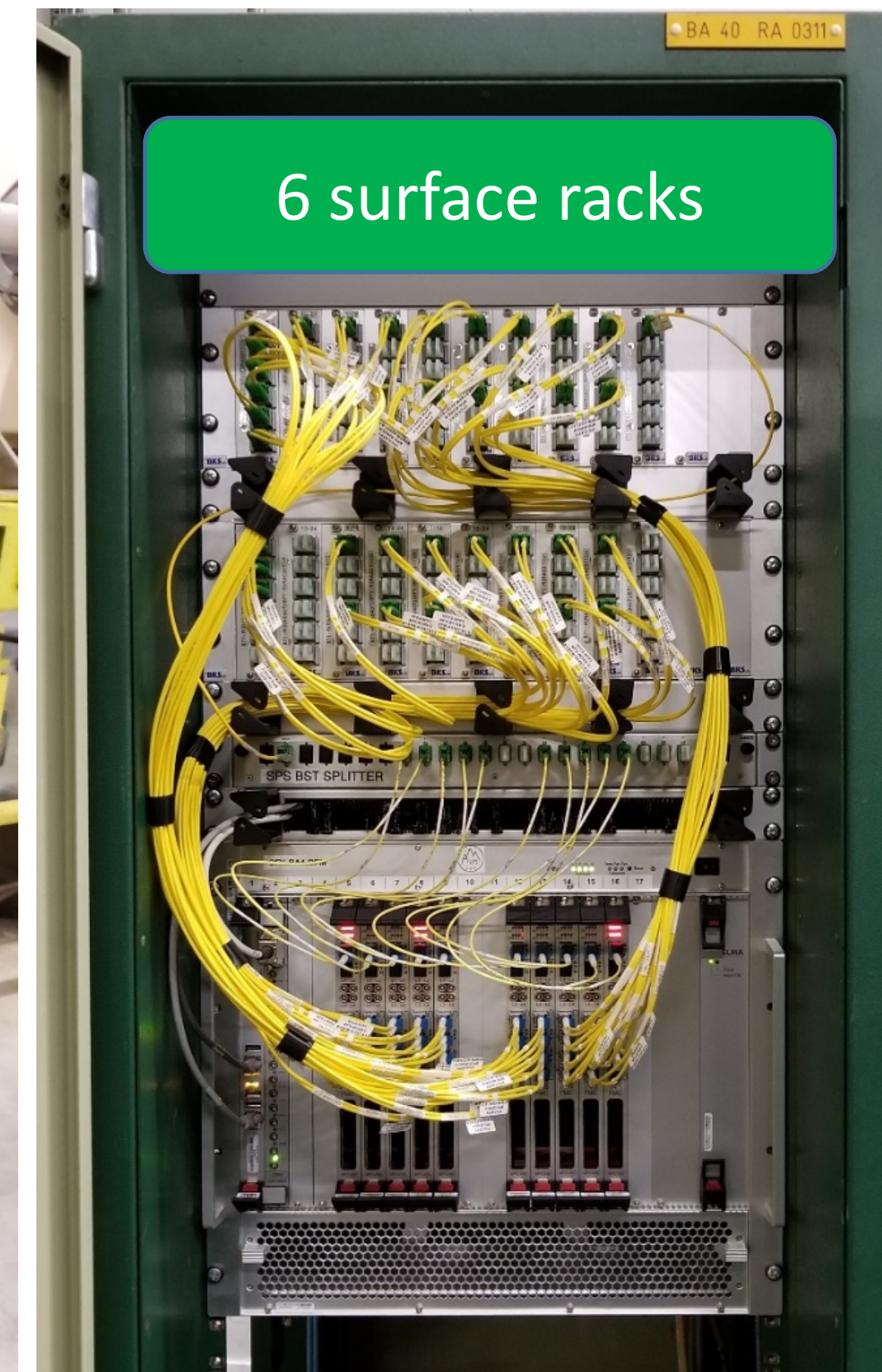
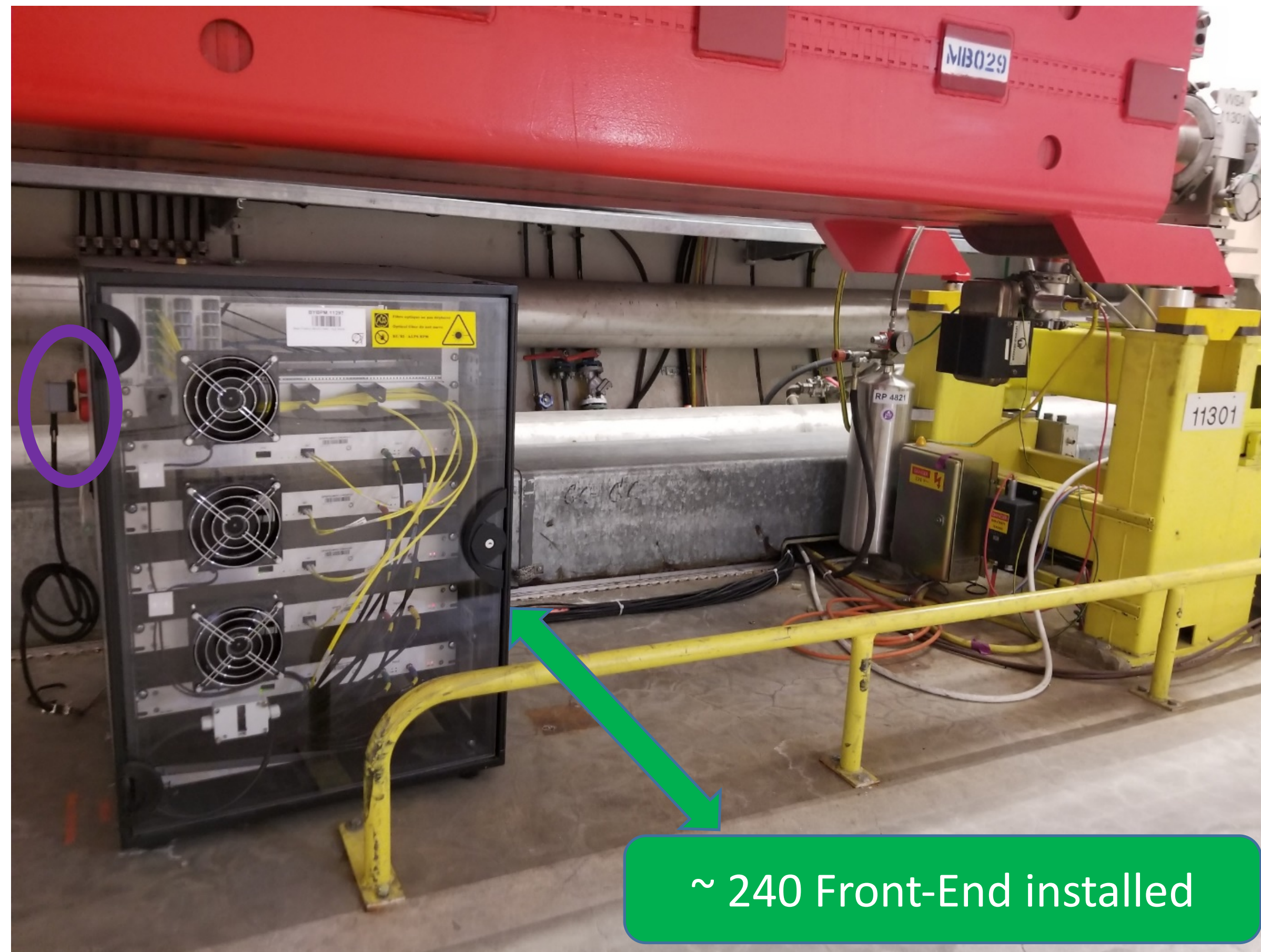
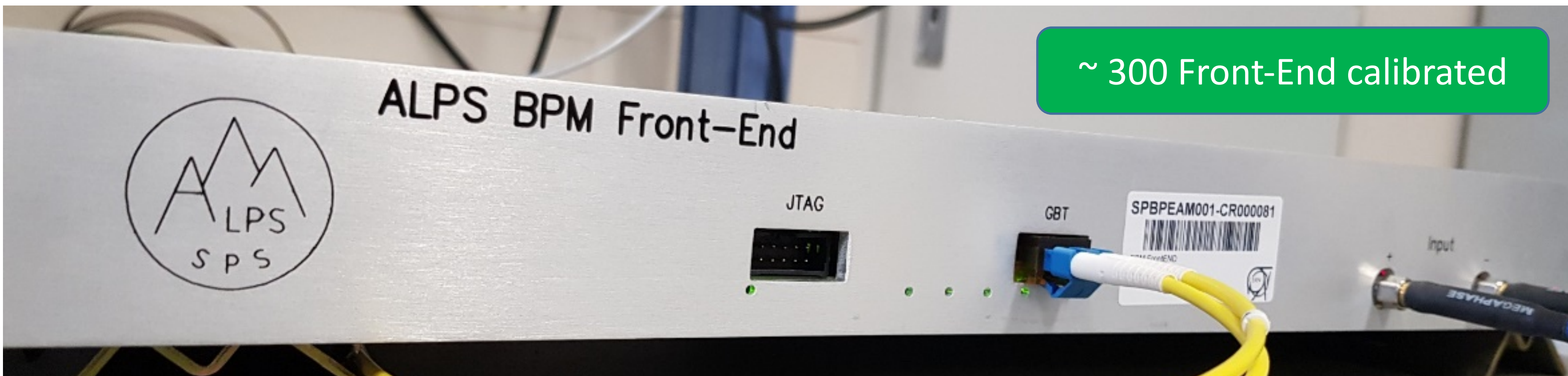
- ALPS : the SPS system just commissioned
  - and to be used for the TT2 and TT10 transfer lines
- LHC BPM consolidation
- HL-LHC
- AD, ELENA, BOOSTER and PS

# The BPM systems

## Just commissioned or in design phase

- ALPS : the SPS system just commissioned
  - and to be used for the TT2 and TT10 transfer lines
- LHC BPM consolidation
- ~~HL-LHC~~
- ~~AD, ELENA, BOOSTER and PS~~

**ALPS, the new SPS BPM system**

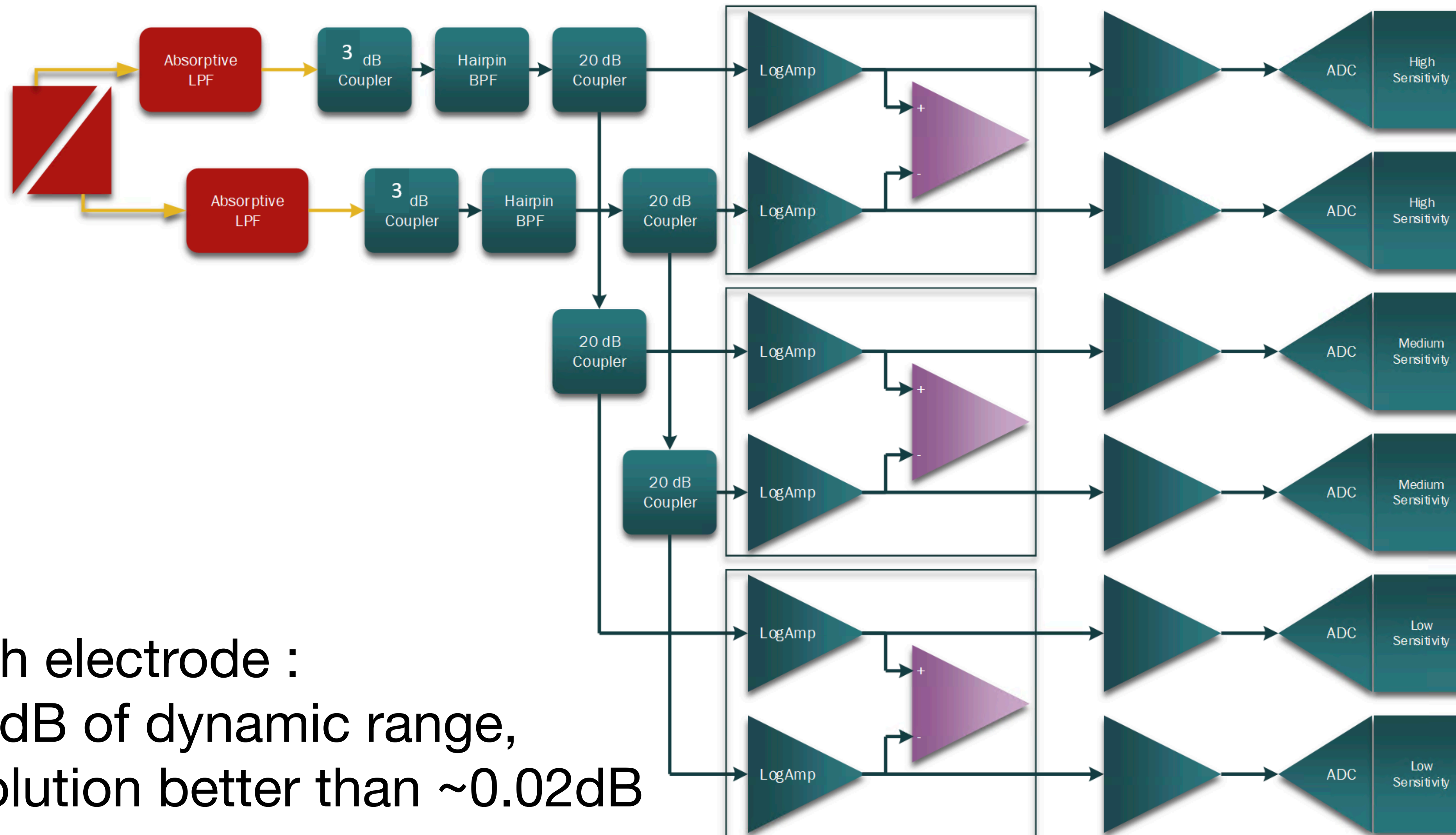


# ALPS: A Logarithmic Position System

For each electrode :

- \* ~90dB of dynamic range,
- \* resolution better than ~0.02dB

# ALPS: A Logarithmic Position System

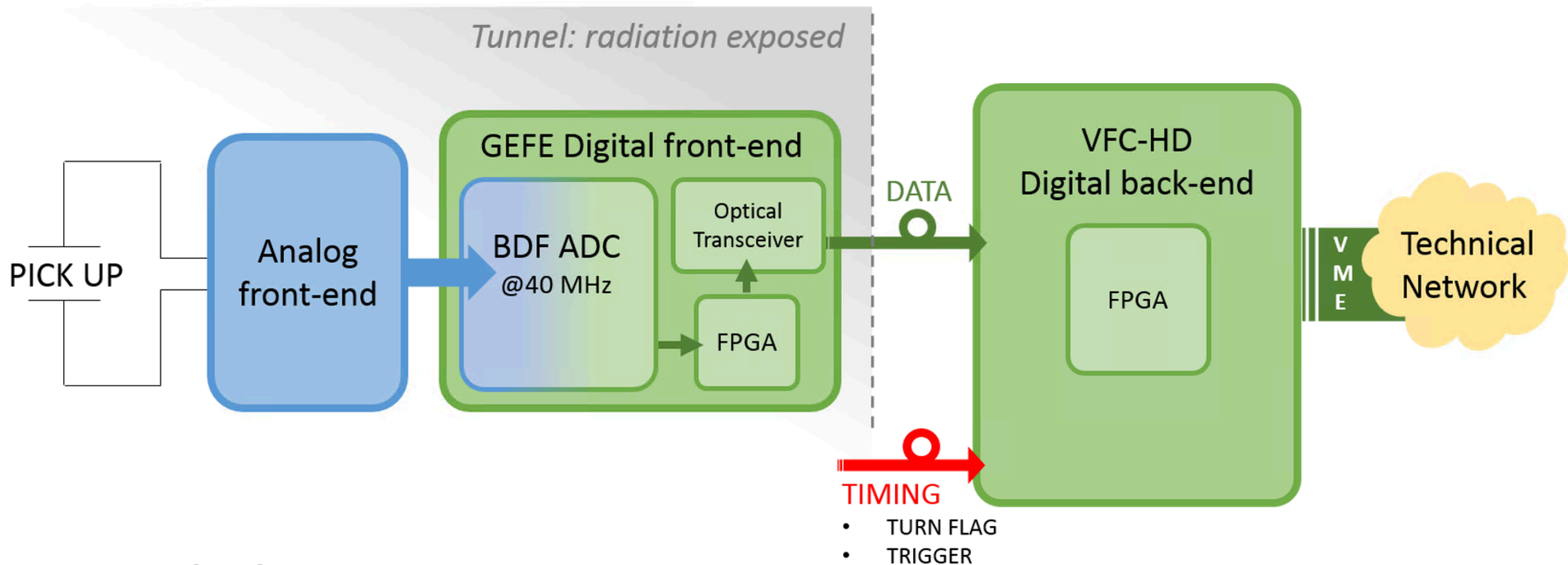


For each electrode :

- \* ~90dB of dynamic range,
- \* resolution better than ~0.02dB

# ALPS: A Logarithmic Position System - SPS

## System structure





# ALPS

## The numbers for the SPS and the transfer lines TT2/TT10

- 300 front-ends produced for the SPS: 240 operational and installed during LS2
- 50 being produced for TT2/TT10
- Rad-tolerant elements from EP-ESE in the system
  - SM-VTRx : 350
  - GBTx : 350
  - AD41240: 700
  - FEASTMP : 700
  - Lhc4913: 350

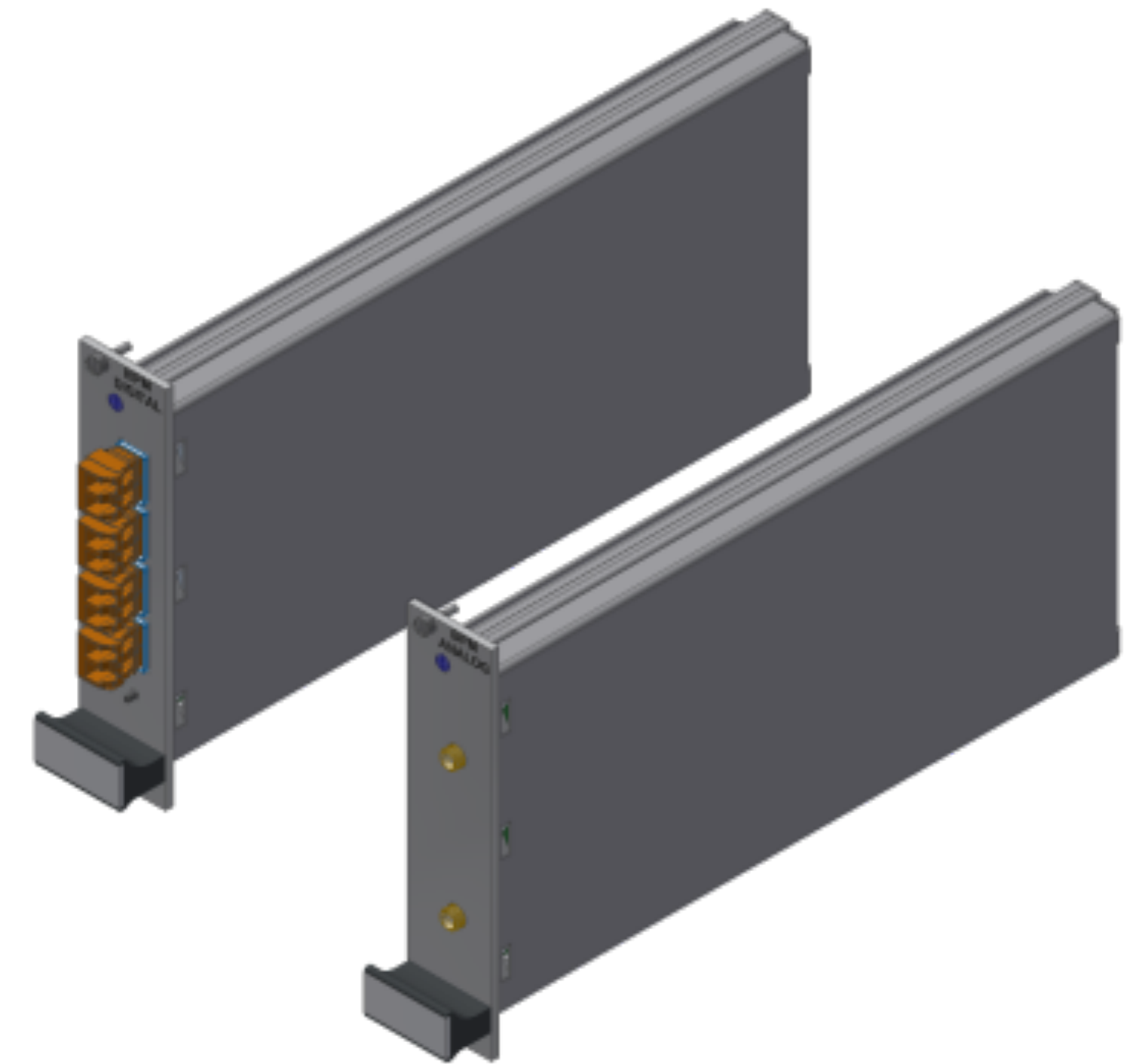
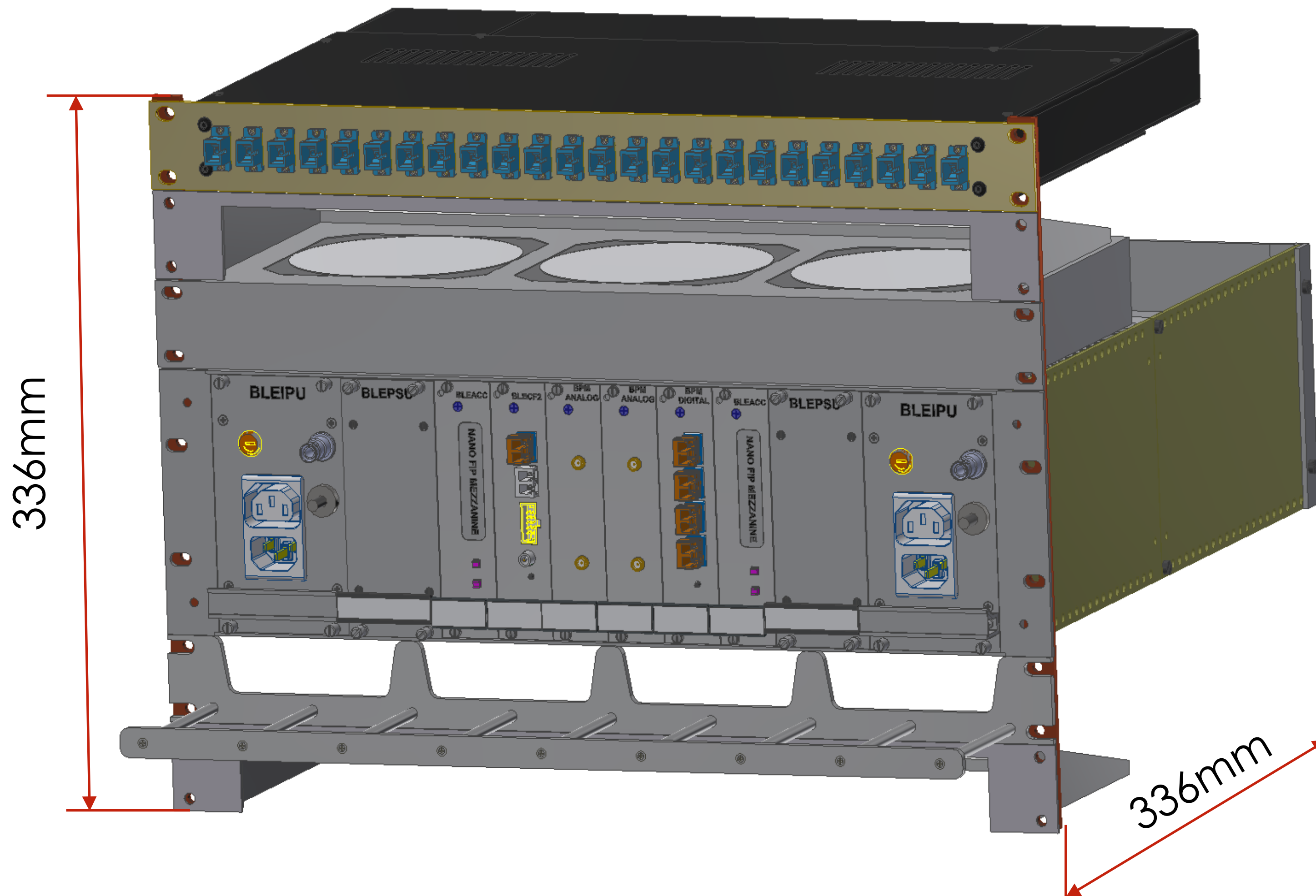
# **LHC BPM consolidation**

# The LHC BPM consolidation

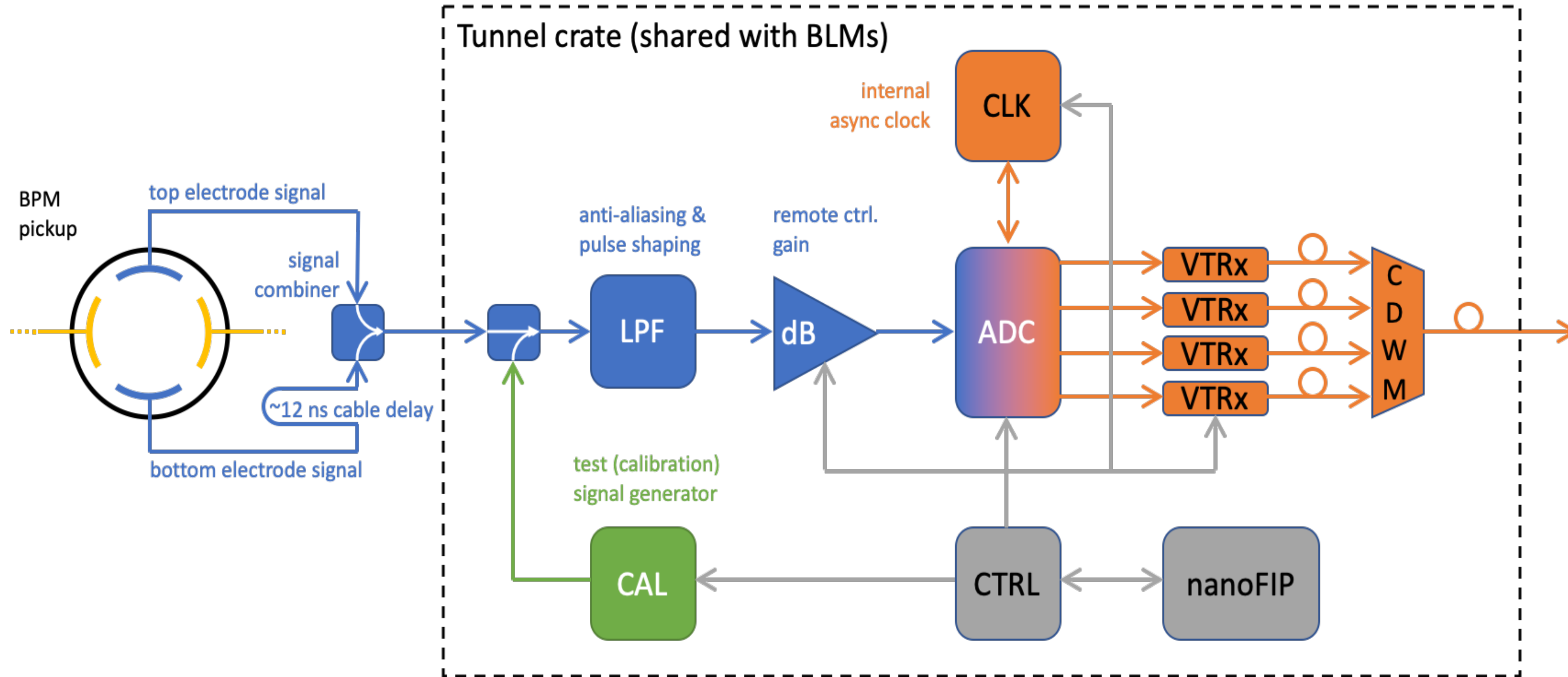
**Design in run 3, test in run 4, deployment in LS4**

- LHC BPM consolidation foreseen originally for LS3 but moved for budget reasons to LS4
- ~1100 double plane BPM (1250 if we were to add the transfer lines)
- Budget of 6 MCHF
- Should reuse the current optical infrastructure
- Tunnel crates to be shared with the BLM

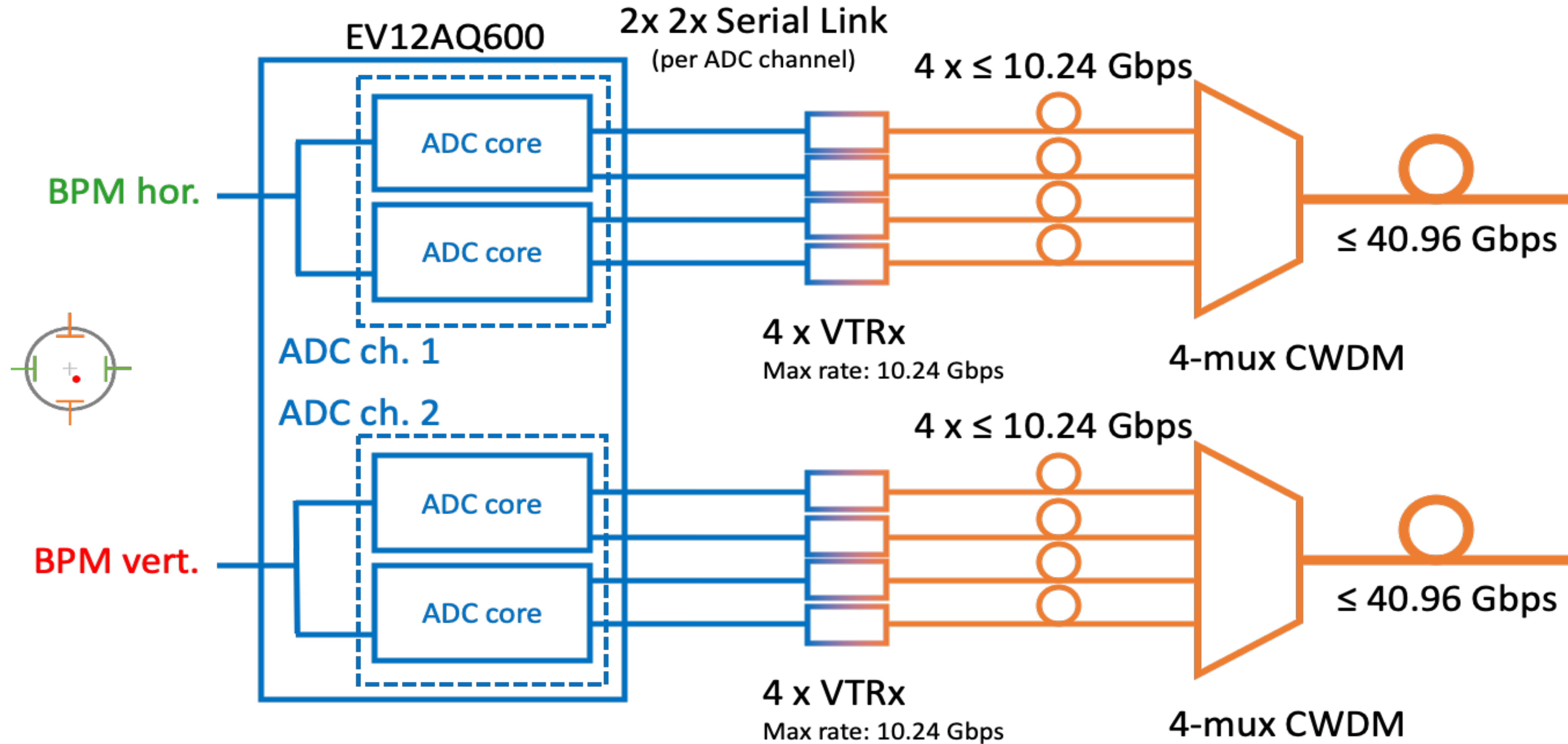
# The LHC BPM consolidation



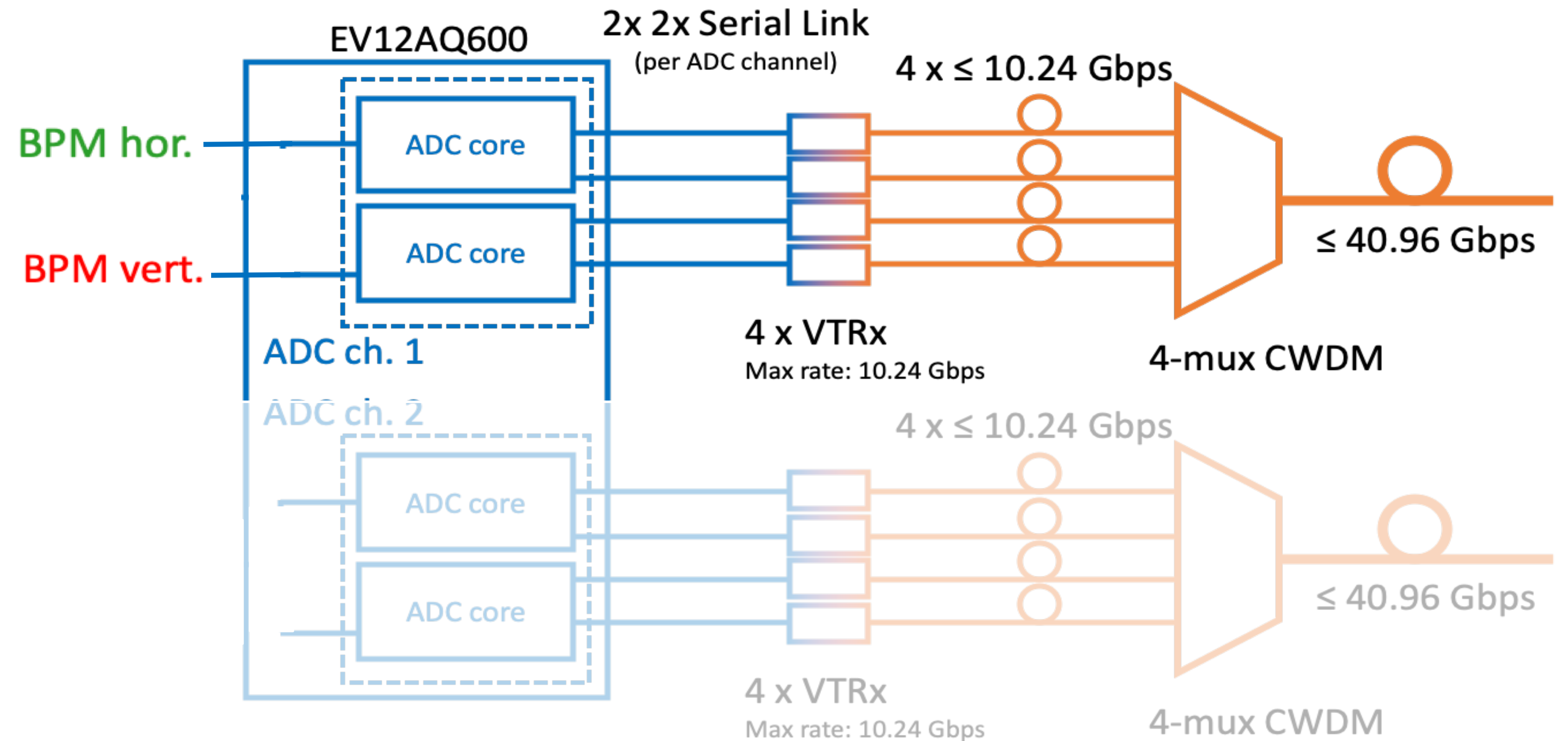
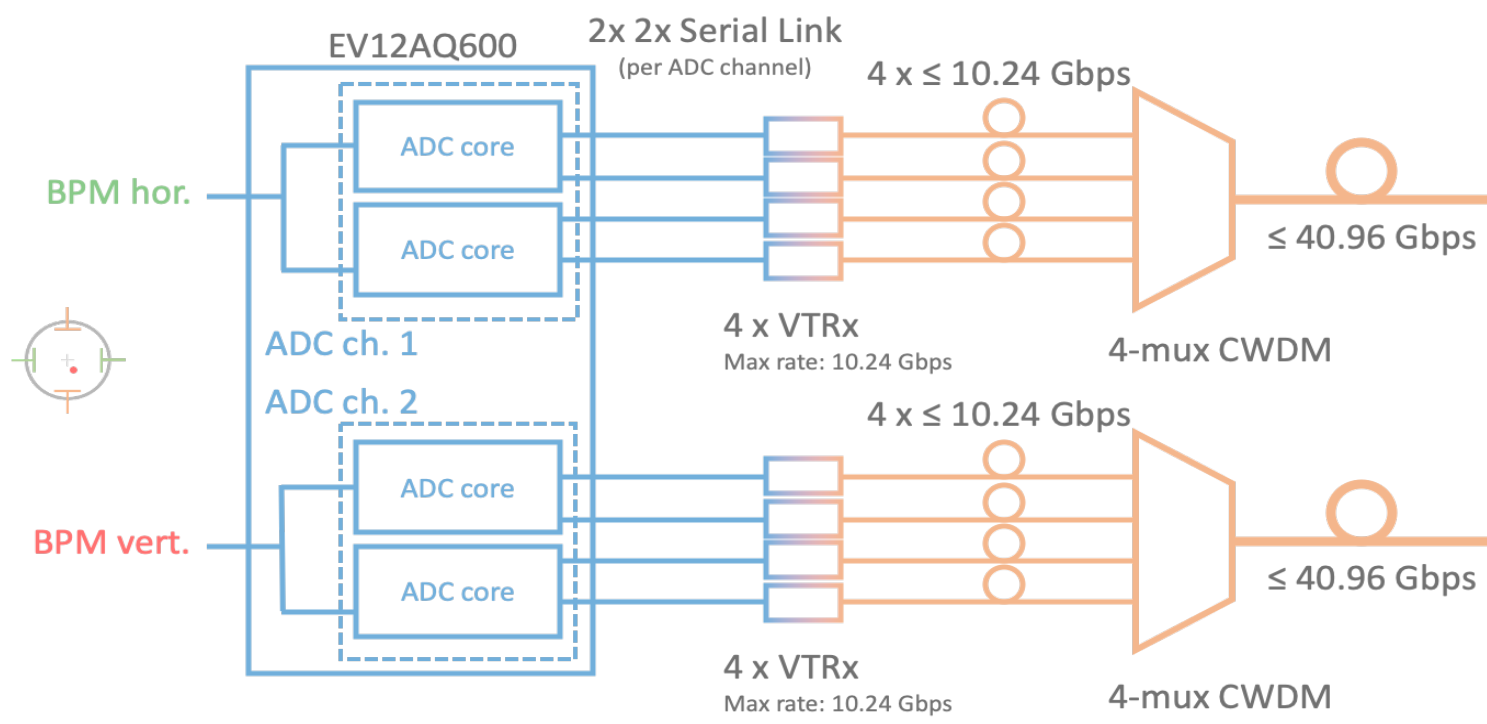
# The LHC BPM consolidation



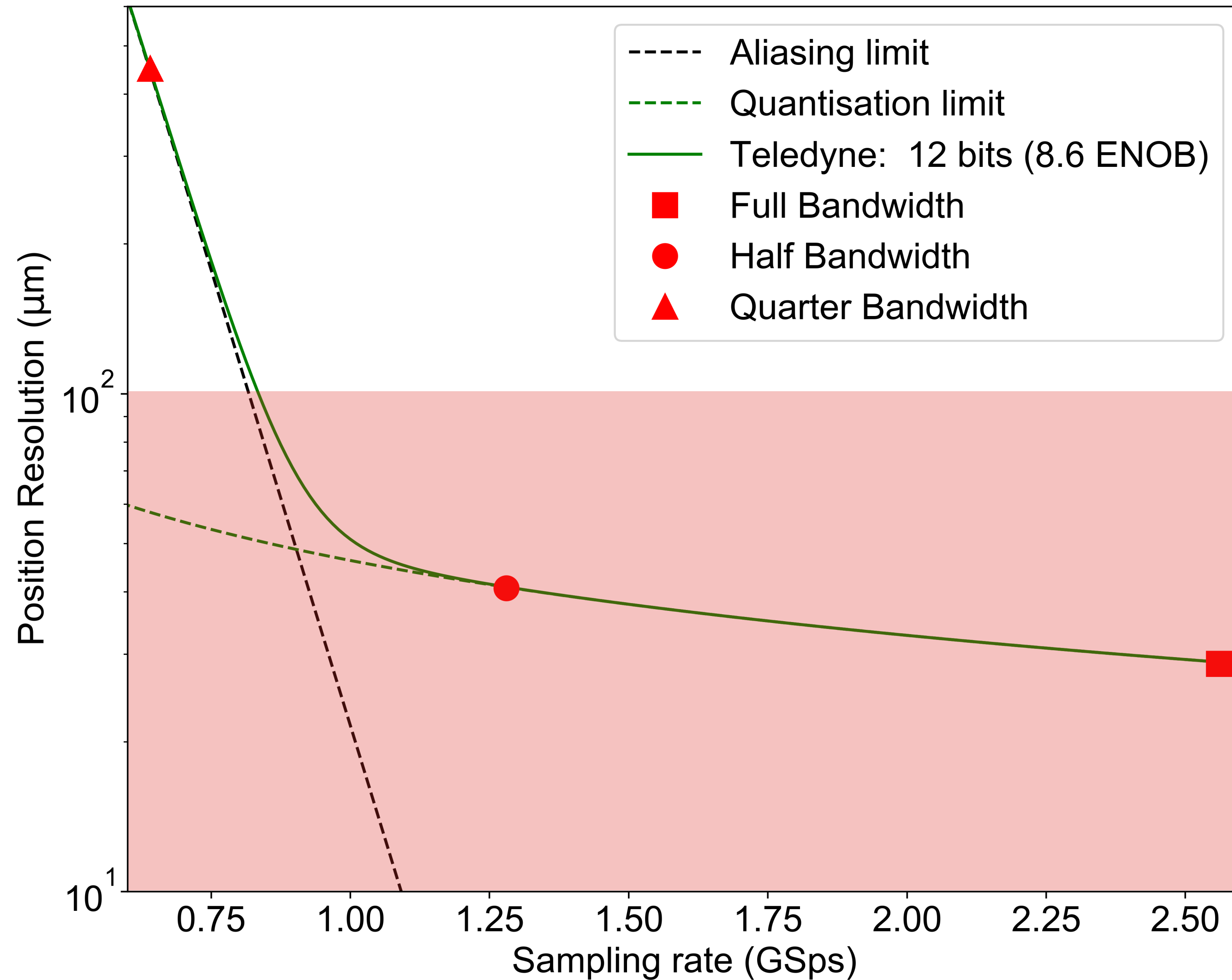
# The LHC BPM consolidation



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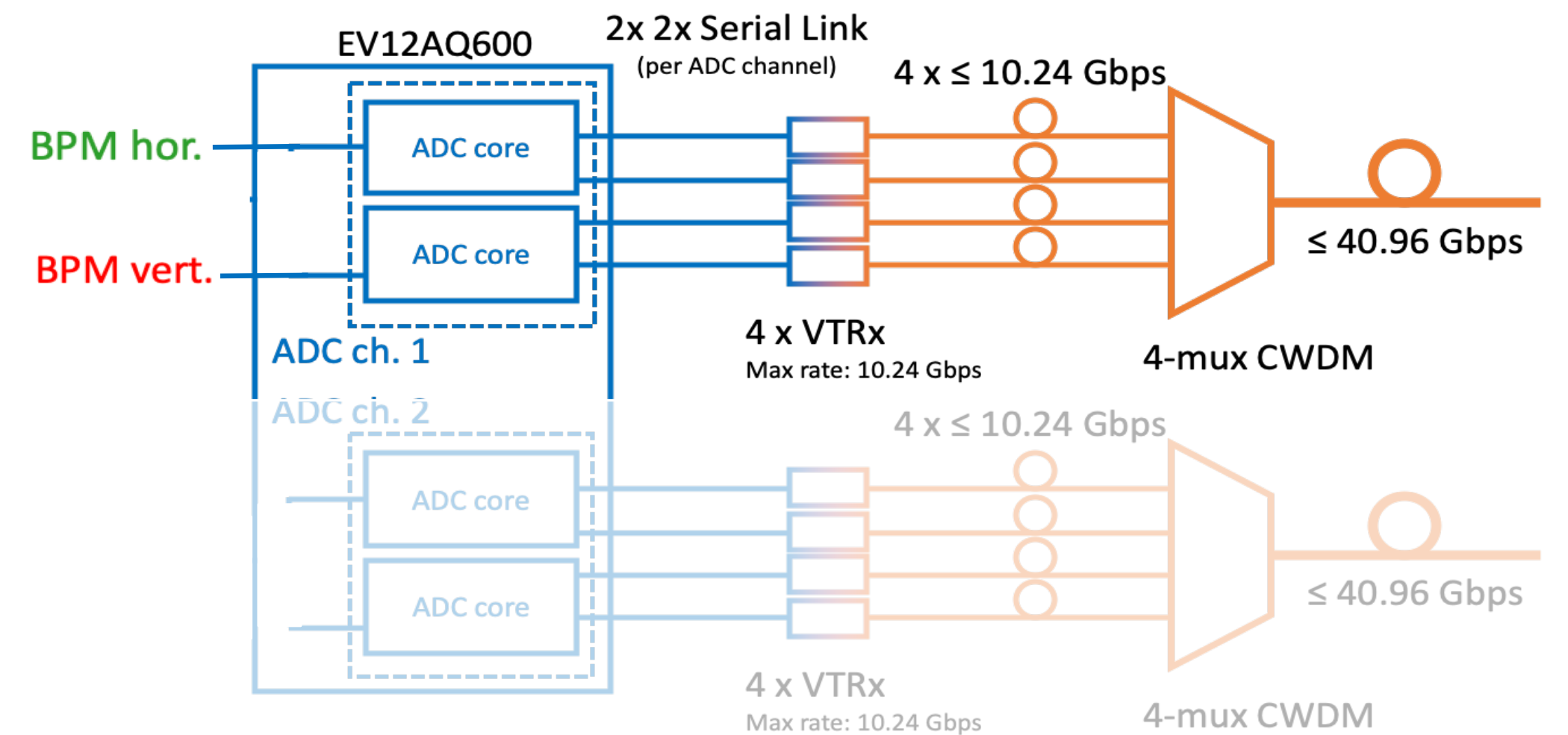
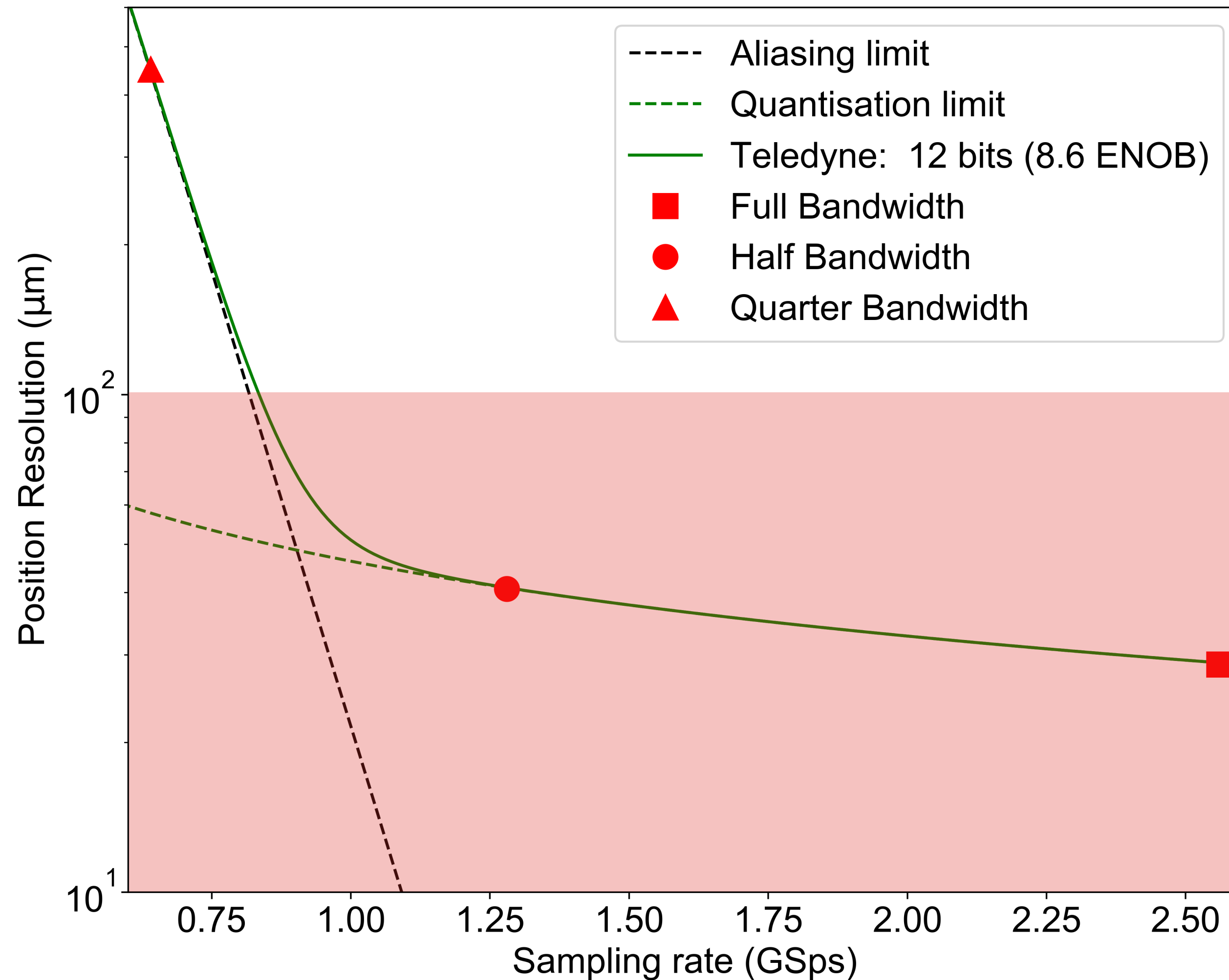


# The LHC BPM consolidation





# The LHC BPM consolidation



# The LHC BPM consolidation

## The numbers of rad tolerant FE for the ring

- 700 front-ends
- Rad-tolerant elements from EP-ESE foreseen:
  - 2800 SM-VTTx (5600 TOSA)
  - 1400 optical muxes/demuxes pairs
- Components still need to be selected: PS, both DC/DC and linear
- COTS identified: ADC and ***PLL***

**Few closing words**

# Few closing words (numbers)

## SPS

- SM-VTR<sub>x</sub> : 350
- GBT<sub>x</sub> : 350
- AD41240: 700
- FEASTMP : 700
- Lhc4913: 350

## LHC

- 2800 SM-VTT<sub>x</sub> (5600 TOSA)
- 1400 optical muxes/demuxes pairs
- ??? DC/DC and linear regulators