

LHC COLLIMATOR IMPEDANCE : V6.5 LAYOUT, PHASE 1 (IR7 + IR3)

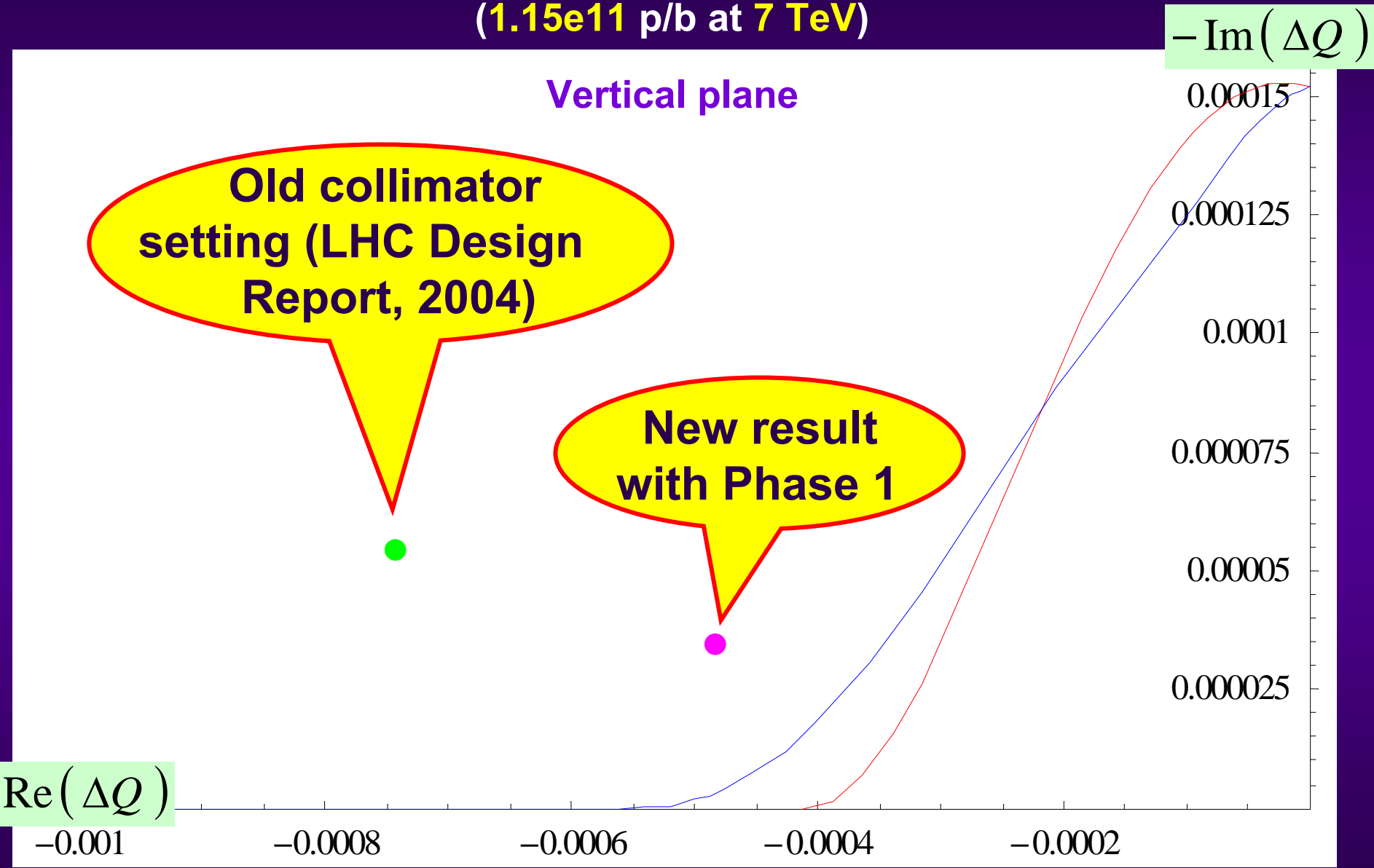
E. Métral

- ◆ New situation = Present baseline for Phase 1
 - ◆ IR7 : 3 P + 11 S = 14 collimators
 - IR3 : 1 P + 4 S = 5 collimators
 - ⇒ 19 collimators in total = 4 P + 15 S
- ◆ Old situation (LHC Design Report, to be published) :
 - IR7 : 20 collimators
 - IR3 : 7 collimators
 - ⇒ 27 collimators in total = 5 P + 22 S



~ - 30% in
number
and length

Stability diagram (maximum octupoles) and collective tune shift for the most unstable coupled-bunch mode and head-tail mode 0
(1.15e11 p/b at 7 TeV)



$$\text{Re} \Rightarrow -35\%$$

◆ Gain in the vertical coherent tune shift

$$\text{Im} \Rightarrow -36\%$$

◆ Gain in the heat load

■ Old value $P_{loss} \approx 3593 \text{ W}$

■ New value (Phase 1) $P_{loss} \approx 2456 \text{ W}$

Same power
per unit length :
 $\approx 160 \text{ W/m}$

$$P_{loss} \Rightarrow -32\%$$

Stability diagram (maximum octupoles) and collective tune shift for the most unstable coupled-bunch mode and head-tail mode 0 (1.15e11 p/b at 7 TeV)

