HL-LHC v1.6. E = 7.0 TeV. $N_b \simeq 1.16 \times 10^{11} \text{ ppb}$, $L_{1/5} = 5.07 \times 10^{34} \text{cm}^{-2} \text{s}^{-1}, L_2 = 1.78 \times 10^{30} \text{cm}^{-2} \text{s}^{-1}, L_8 = 1.99 \times 10^{33} \text{cm}^{-2} \text{s}^{-1}$ $PU_{1/5} = 150$, $\beta_{x=1}^* = 0.15$ m, $\beta_{y=1}^* = 0.15$ m, polarity $IP_{2/8} = 1/1$ $\Phi/2_{1(H)} = 250 \,\mu\text{rad}, \, \Phi/2_{5(V)} = 250 \,\mu\text{rad}, \, \Phi/2_{2,V} = -170 \,\mu\text{rad}, \, \Phi/2_{8,V} = 170 \,\mu\text{rad}$ $\sigma_z = 7.61 \text{ cm}, \ \varepsilon_p = 2.3 \ \mu\text{m}, \ Q' = 15, \ I_{MO} = 60.0 \ A, \ C^- = 0.001$ 25ns 2452b_2440_1952_2240_248bpi_12inj. Bunch 1130. 65.302 65.302 65.312 65.312 65.312 65.310 65.35 - 7.0 - 6.5 - Winimum DA (a) 60.321 -60.319 -60.317 -60.315 -- 5.0 60.313 -60.311 -60.309

Horizontal tune Q_x

/ertical tune Q_v