HL-LHC v1.6. E = 7.0 TeV. CC = 0.0  $\mu$ rad. N<sub>b</sub>  $\simeq 1.89 \times 10^{11}$  ppb.  $L_{\rm IP1} \simeq 6.44 \times 10^{34} \ {\rm cm^{-2} s^{-1}}$ .  $PU_{\rm IP1} \simeq 237$ .  $L_{\rm IP5} \simeq 6.4 \times 10^{34} \ {\rm cm^{-2} s^{-1}}$ .  $PU_{\rm IP5} \simeq 235$ .  $L_{IP2} \simeq 1.03 \times 10^{28} \text{ cm}^{-2} \text{s}^{-1}$ .  $PU_{IP2} \simeq 6.27 \times 10^{-5}$ .  $L_{IP8} \simeq 2.38 \times 10^{33} \text{ cm}^{-2} \text{s}^{-1}$ .  $\beta_{x=1}^* = 0.15 \text{ m}, \ \beta_{y=1}^* = 0.15 \text{ m}. \text{ polarity } \text{IP}_{2/8} = 1/1. \ \sigma_z = 7.61 \text{ cm}.$  $\Phi/2_{1(H)} = 250 \text{ }\mu\text{rad. }\Phi/2_{5(V)} = 250 \text{ }\mu\text{rad. }\Phi/2_2 = -170 \text{ }\mu\text{rad. }\Phi/2_{8,V} = 170 \text{ }\mu\text{rad.}$  $\varepsilon_{\rm p} = 2.5 \ \mu {\rm m. \ O}' = 15. \ {\rm I}_{\rm OCT} = -60.0 \ {\rm A. \ C}^- = 0.001.$ 8b4e\_1972b\_1960\_1178\_1886\_224bpi\_12inj. Bunch 88. 62.3/6 62.318 62.312 62.314 爨 62.31 60.32 -7.5 60.318 -- 7.0 60.316 -60.314 -- 5.0 60.312 -60.31 -

Vertical tune Q<sub>v</sub>

Horizontal tune Q<sub>x</sub>