Injection HL (from run III optics). $E=0.45~\text{TeV}.~N_b\simeq 2.3\times 10^{11}~\text{ppb},$ $\beta_{x,\,1}^*=10~\text{m},~\beta_{y,\,1}^*=10~\text{m},~\text{polarity}~\text{IP}_{2/8}=1/1,~\text{phase_change}=1$ $\sigma_z=7.61~\text{cm},~\epsilon_n=2.5~\mu\text{m},~Q^{'}=15.0,~I_{MO}=45~\text{A},~C^{-}=0.001$ $25\text{ns}_2452\text{b}_2440_1952_2240_248\text{bpi}_12\text{inj}.~\text{Bunch}~1130.$

