

SLHC The High Luminosity Upgrade

Lyn Evans

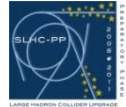


2nd SLHC-PP annual meeting, CERN 26th February 2009





Peak Luminosity



$$L = \frac{N_b^2 n_b f_r \gamma}{4\pi \epsilon_n \beta^*} F$$

N_b number of particles per bunch

n_b number of bunches

f_r revolution frequency

ϵ_n normalised emittance

β^* beta value at Ip

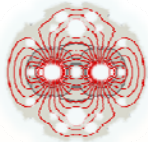
F reduction factor due to crossing angle

N_b, ϵ_n \longrightarrow injector chain

β^* \longrightarrow LHC insertion

F \longrightarrow beam separation schemes

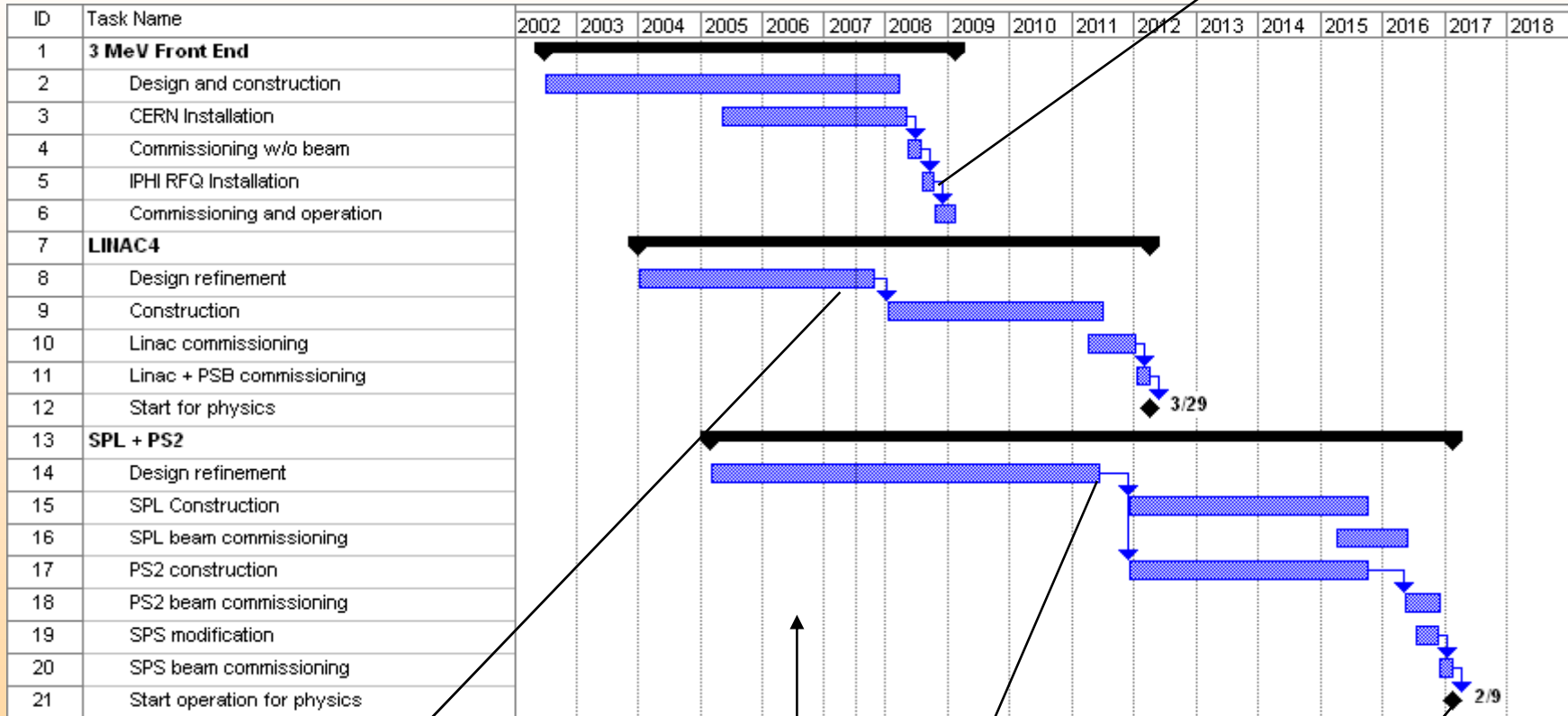
n_b \longrightarrow electron cloud effect



Planning ...



3 MeV test place ready



Linac4 approval

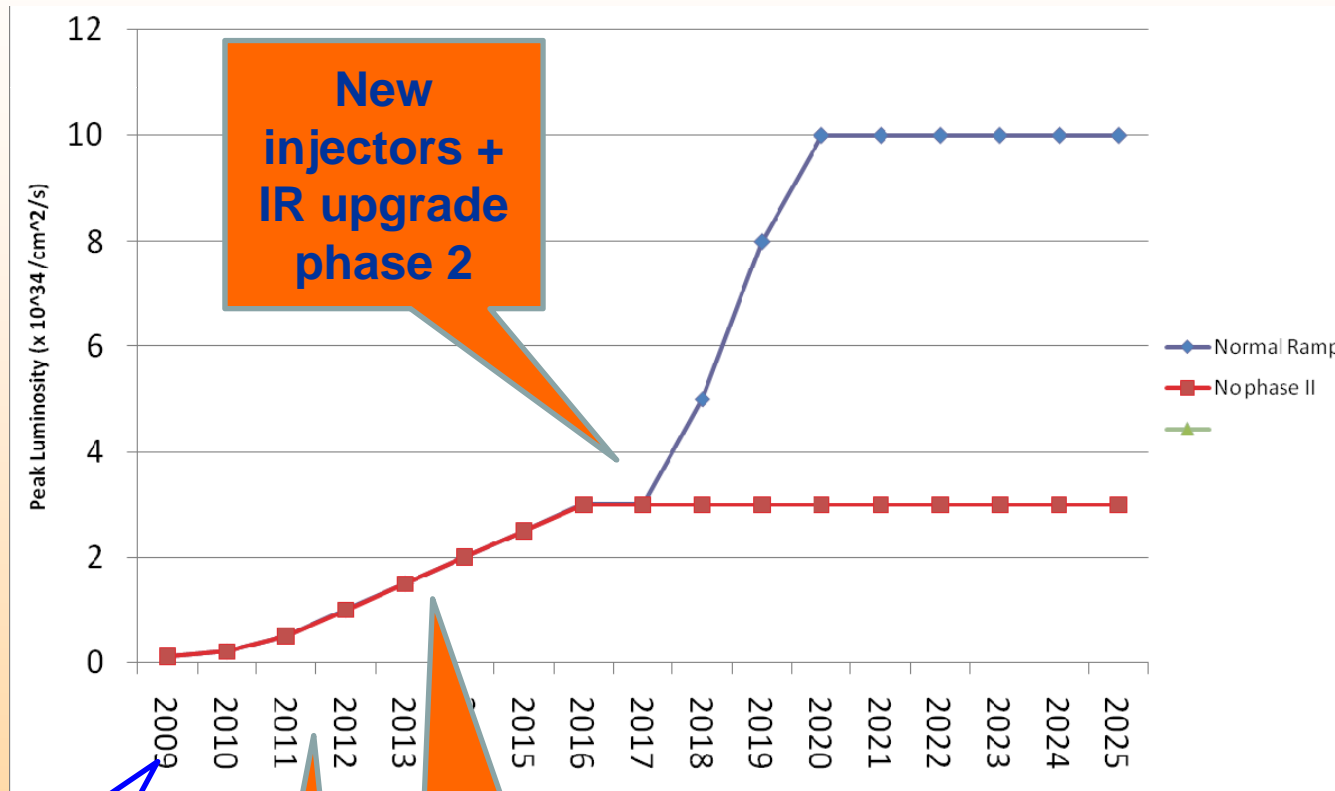
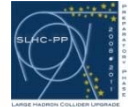
CDR 2

SPL & PS2 approval

Start for Physics



Peak luminosity...



New injectors + IR upgrade phase 2

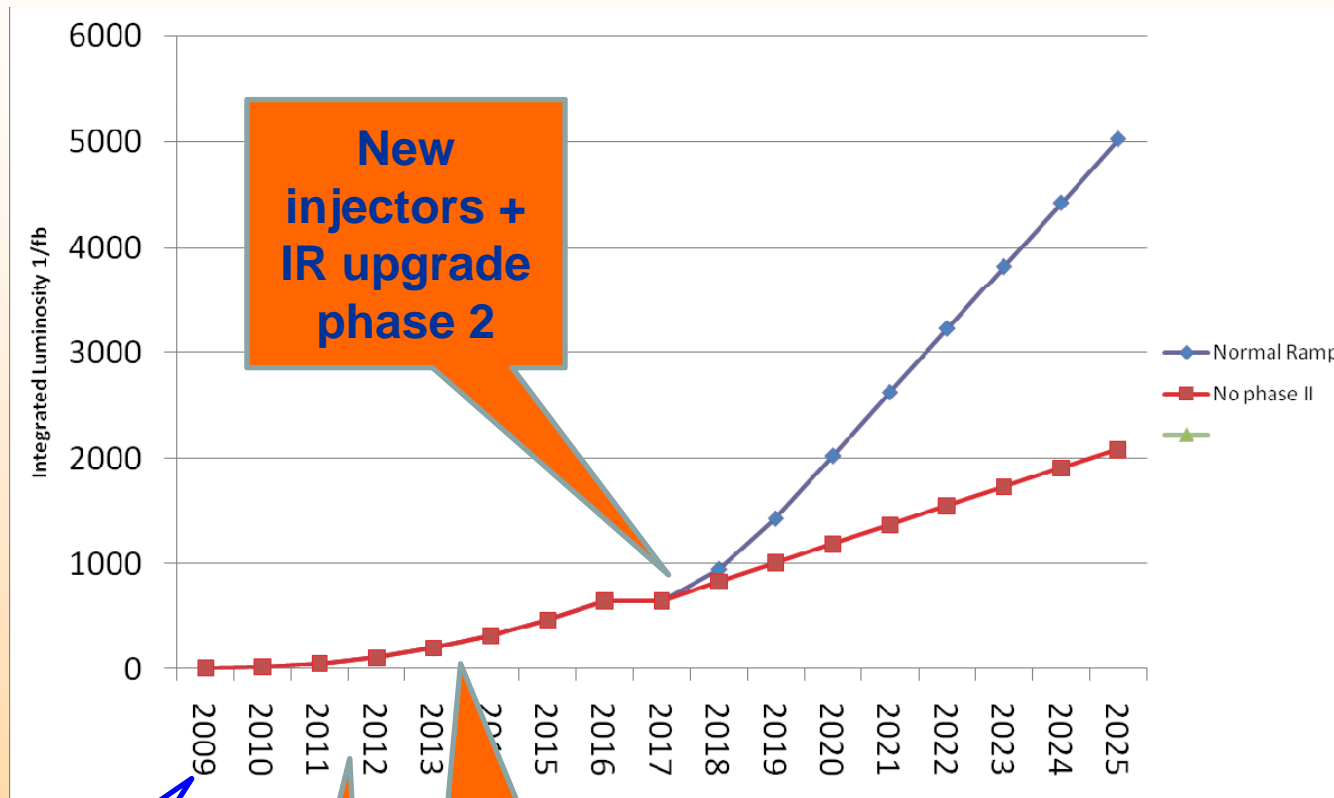
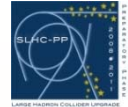
Early operation

Collimation phase 2

Linac4 + IR upgrade phase 1



Integrated luminosity...



Early operation

Collimation phase 2

Linac4 + IR upgrade phase 1

New injectors + IR upgrade phase 2