



Minutes of the FCC Hadron Collider General Design Meeting

18th September 2014

Participants : R. Alemany, M. Benedikt, M.I. Besana, X. Buffat, A. Chance*, J. Jowett, E. Métral, M. Schaumann, D. Schulte, M. Syphers*
(*Vidyo connection)

D. Schulte presented [the baseline layout of the FCC](#). The baseline is now a *round-racetrack*.

- D. Schulte mentioned that, despite the lack of details concerning the exact length required for the different components, this baseline layout should be used for both the civil engineering and machine design studies in order to identify the issues and re-iterate if needed at the Annual workshop and meeting of the Future Circular Collider (FCC) study in March 2015. M. Benedikt suggested to start with circumferences of 3.0, 3.25, 3.5 and 3.75 times the LHC circumference. D. Schulte commented that one will use exact multiples of the LHC circumference (respectively : 79976.649 m, 86641.370 m, 93306.090 m and 99970.811 m).
- R. Alemany asked whether the two experiments at opposite azimuth are the two high luminosity ones. D. Schulte answered that the current baseline have the two high luminosity experiments located on the same side (i.e. Expr. 1 and 2). B. Holzer mentioned that this choice is driven by beam-beam considerations. X. Buffat mentioned that the passive compensation of PACMAN effects should be reconsidered in this case. J. Jowett mentioned that this would also lead to significant reduction of the luminosity due to the abort gaps.
- M. Syphers mentioned that for the SSC they foresaw small straight sections at the locations of the shafts in the arcs.

M. Schaumann presented the [Potential Performance for p-p, Pb-Pb and p-Pb collisions in FCC-hh](#). She showed that the radiation damping leads to a large increase of the luminosity at the beginning of the fill. For p-p operation, after few hours, the IBS becomes strong enough to balance the effect of radiation damping. The equilibrium emittances lead to large beam-beam tune shifts, that might require mitigation resulting in luminosity loss. For the ion operation, the luminosity is significantly affected by the turnaround time. Due to emittance growth and losses at the injection plateau, scenarios with a single injection from the LHC are beneficial for the integrated luminosity, especially for large turnaround times.

- R. Alemany mentioned that a faster turnaround than 2h will be difficult to achieve, due to magnet constrains. D. Schulte mentioned that due to the fast burn-off, the turn around time is critical for protons as well.
- A. Chance asked about the maximum pileup acceptable for the detectors. D. Schulte answered that the present statement from the experiments is a limit at 170 events per bunch crossing leading to a levelled luminosity of $5 \cdot 10^{34} \text{ cm}^{-2}\text{s}^{-1}$ for 25 ns operation. D. Schulte suspects that this limitation might change in the future.

D. Schulte asked whether one could think of a getting a PhD student to work on the alignment.

D. Schulte closed the meeting at 5:15, the next meeting will be held on the 16th of October 2014.