rMPP meeting on FMD4 2022 approval

The meeting took place on Friday, **November 18th, 2022, 10.00-11.00,** via zoom.

Participants: Andy Butterworth (SY-RF), Stephane Fartoukh (BE-ABP), Cedric Hernalsteens (TE-MPE), Giovanni Iadarola (BE-ABP), Filip Moortgat (EP-CMG), Brian Petersen (EP-ADT), Jan Uythoven (TE-MPE), Jorg Wenninger (BE-OP), Christoph Wiesner (TE-MPE), Daniel Wollmann (TE-MPE)

1 Introduction

J. Uythoven welcomed the participants and recalled the schedule for the Floating MD4. It consists in MD7003 (2023 LHC Configuration), which will be discussed in this meeting, and in MD7224 (Collimation quench test with protons), which was already discussed in the previous rMPP meeting (see Indico).

2 MD7003: 2023 LHC Configuration (Stephane Fartoukh)

The slides presented can be found on Indico. The MD procedure can be found on ASM.

- S. Fartoukh **introduced the MD**:
  - He summarised the main results from MD1 & MD2 (see slides 2-6) and outlined the objectives for this MD (see slide 7). He then presented the main steps for the MD and the proposed fills (see slides 8-9).
- The required validation **loss maps** were discussed (see slide~8), together with the feasibility to perform them in a single fill. This resulted in the following **ACTION (S. Redaelli): Define the required betatron loss maps, off-momentum loss maps and aperture measurements as well as the practicalities how to perform them.**
- The following comments and conclusions were given concerning the **beam intensities for the different MD fills**:
  - J. Uythoven reminded that the normal LHC intensity ramp-up includes steps of 3b/12b, 75b, 300b, 600b, …
  - D. Wollmann highlighted that the intensity ramp-up foresees stepping up either in number of bunches or in bunch intensity, but not increasing both in the same step. He underlined that this approach should also apply for the MD. He recalled that the machine is operated with new optics.
  - After a detailed discussion, **it was agreed on the following fills and beam intensities**:
    - **Fill#1: Validation fill with 2 nominals + 10 probes and total intensity <3x10^{11} protons/beam**
    - **Fill#2: 12b + 48b + 2 INDIVs with 1.4x10^{11} protons per bunch (ramp-up fill)**
    - **Fill#3: 12b + 360b (using 36b trains) with 1.4x10^{11} protons per bunch (e-cloud measurements)**
    - **Fill#4: 12b + 3x48b with 1.8x10^{11} protons per bunch (beam-beam measurements)**
  - J. Wenninger commented that it would be very difficult to perform all four fills and the planned tests within the foreseen MD slot of 12 hours.
  - B. Petersen agreed for the LPCs that a few additional hours could be taken out of the physics program to support this important activity and its safe execution.

- J. Uythoven thanked B. Petersen for offering this opportunity and concluded that the originally foreseen 12 hours for the MD will be used for Fills#1-3, while Fill#4 (~3 hours) would be performed after MD7224 (quench MD) or later in the week. This must be scheduled with the machine coordinators.
- G. Iadarola confirmed that 360 bunches per beam should be sufficient to observe potential e-cloud effects.

The MD was approved understanding that the modifications and conclusions given above will be included in the procedure. J. Uythoven closed the meeting.