rMPP meeting on MD Block 1 2022 approval

October 4th, 2022, via Zoom

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The slides of all presentations can be found on Indico.

Introduction

Jan detailed the present LHC schedule. MD block 1 is now scheduled for 17-18 October. MDs for this block have been scheduled based on procedures already submitted for the original MD block 1. Another LSWG will take place on 11 October to discuss MDs for MD block 2. Jan summarised the schedule of the MD1 block and the selected MDs.

rMPP comments on MDs #6945 and #6948

MD #6945 - RF power limitations and instability thresholds

Jan asked if any changes are foreseen in the RF interlock. Helga replied that no change is foreseen.

Helga confirmed that only the start of ramp losses are of interest in case time allows to ramp. Matteo commented that one will have to use the 6.8 TeV cycle. The energy at which the dump will take place should be added explicitly in the procedure, especially with high-intensity bunches. The injectors can prepare intensities up to 1.6×10^{11} protons.

Helga mentioned that the MD could be postpone to MD block 2.

The first part of the MD (power limitation) will use trains, the second part (stability thresholds) will use single bunches. Gianni asked if there will be supported to prepare these beams in the injectors. Helga confirmed. Rama will be the contact person for the MD (if it is during MD1).

Gianni asked if the ADT settings must be changed due to the high intensity. Jorg confirmed that it must be changed. The present limit is at 1.6 x 1011 protons. In case the injected intensities will approach this value, it should be increased by 5-10%. This could also be kept in the settings afterwards. The energy matching must be adjusted at the start of the MD.

Helga confirmed that the cogging has been tested and it worked. Jorg commented that the bumps should be clearly defined. Gianni and Matteo commented that it has been done previously, so the settings should be revived and confirmed.

Jorg commented that the injection settings (including octupoles) should be kept as is.

MD7203: Rematched IR7 optics for improved cleaning performance and impedance

Jorg commented that with the change of optics in the first step, the orbit will change, and it will be difficult to correct it back to the reference. Bjorn replied that the plan is to try to correct it back and in any case to realign the collimators on the resulting orbit As long as the collimators are aligned it should be fine.

Jorg asked about the periodic dispersion. Bjorn confirmed that the beating is negligible.

From a machine protection point of view, the MD will use a safe beam, the IR7 collimator BLMs and BPMs will be masked and the collimators will be moved to the new settings.

The nominal aperture in IR7 is 41 sigma, with the rematched optics and the orbit bump it goes down to 17.6 sigma for Beam 2.

Jorg asked to clarify how the collimators will be closed and aligned. During initial commissioning, only the TCPs are in, not the others. One should put the collimators as for early optics commissioning. Stefano confirmed that there is no need to create functions to drive the bump and the collimators at the same time. The collimators will be closed to nominal positions once the optics and orbits are established before that coarse settings will be set.

The MQW has a strong b3 component which will lead to an optics change during the orbit bump. It is estimated at 1% for the beta-beating, which should not be a problem.

Only the first fill of the MD will be performed during MD1. The second fill will take place during MD block 2. This will be confirmed following the next LSWG.

Roderick asked if this optics is already in LSA. Matteo replied that the settings are partially generated but most of it is done.

The rMPP did not see any problems with the proposed MD.