Foreseen ramping test of the separation correctors

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Preparation for the ramping test

- A test of the ramping of the separation bumps is foreseen in the 2nd half of May.

- The aim is to measure the performance of the correctors involved in the LHC crossing scheme and determine an optimal configuration as well as the system flexibility.

- Different magnet types with different limitations are involved (the most critical being the MCBX limited by the QPS).

$\Rightarrow$ It is important to include all these magnets in the test.

MCBX

- MCBX are special nested magnets acting on both planes and beams at the same time.

- Proposal for the test:

1. Ramp up from I_{min} to I_{max} and back to I_{min}. Find maximum /optimum acceleration /ramping rate.

2. Repeat for different values of I_{max} and I_{min} .

3. Test planes separately and with the other plane powered to an intensity required for the crossing angle.

4. Test settings corresponding to the four IPs.

MCBC and MCBY

- The MCBC and MCBY allow to independently control the two beams in the horizontal and vertical plane.

- They are also used for orbit corrections and optimization.

- Proposal for the test:

$\Rightarrow$Same as for the MCBX.

$\Rightarrow$ Find the maximum /optimum acceleration /ramping rate.

Separation knobs

- Prepare several separation knobs for different optics configurations (with and without MCBX, crossing angle on/off, high beta optics).

- Test separation scan knobs (no MCBX) in both planes (crossing angle on/off).

- Software to be used for this test to be determined:

$\Rightarrow$LSA trim, separation scan application, other?

$\Rightarrow$Find optimal knob setting in terms of collapsing time.

$\Rightarrow$System flexibility (Is it easy to change the settings to go faster or slower?)

Conclusion

- It was possible to reduce the time to bring the beams into collisions by retuning the separation bumps. *(LCU meeting 4th of November).*

$\Rightarrow$A test is foreseen in order to see whether we can improve the hardware performance.

$\Rightarrow$Still need to provide relevant powering tables and a detailed description for the test.

Prepared from the optics point of view. To be complemented by hardware considerations. Any comments or suggestions are welcome.