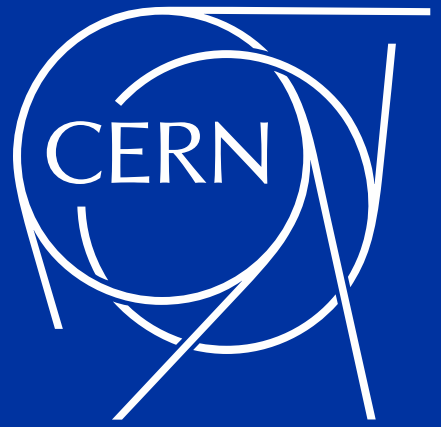


Proposal for a reduced TDIS parking position

A. Perillo Marcone, M. Calviani, A. Lechner on behalf of SY/STI

Thanks to input from A. Di Mauro, C. Bracco, B. Salvant, C. Zannini, N. Mounet, G. Rumolo, L. Mether, R. De Maria, S. Fartoukh and many more

23/04/2024

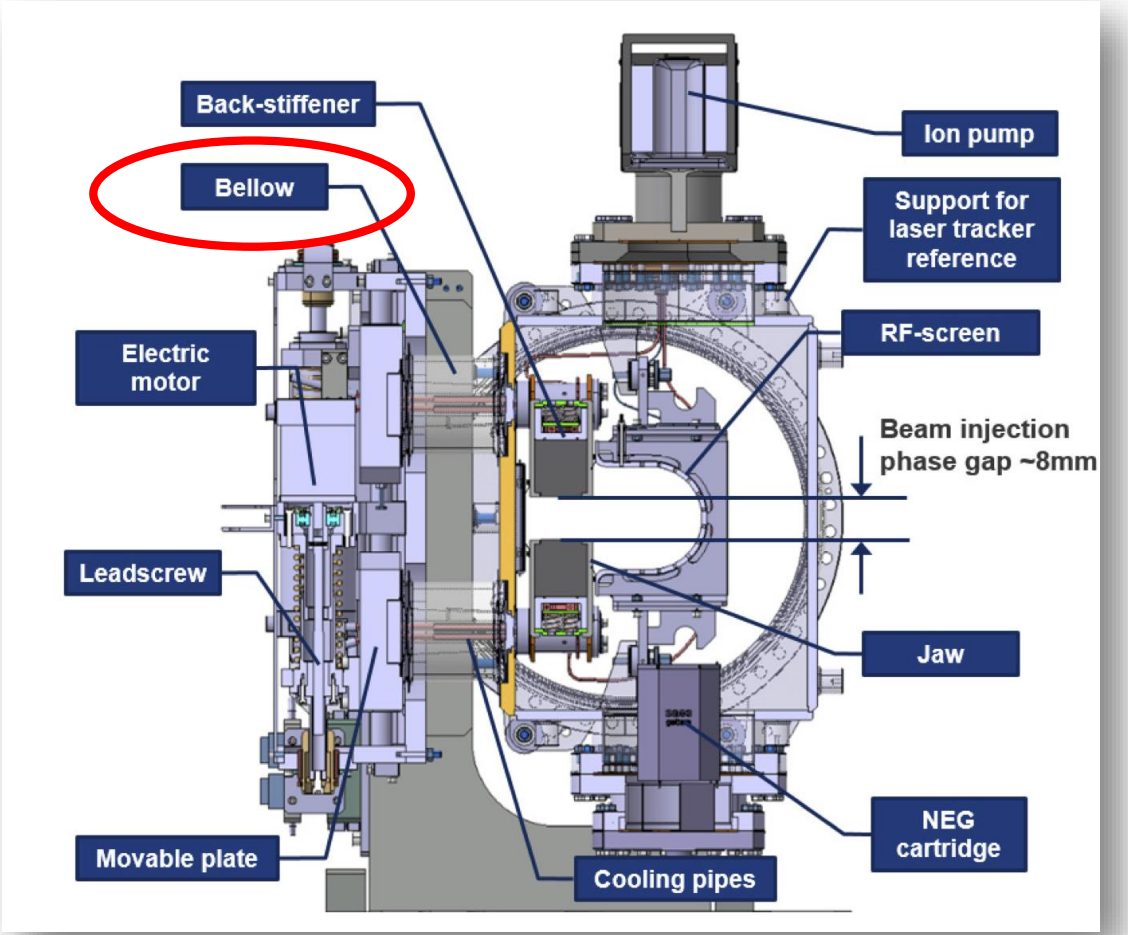
Introduction

Recap from LMC #483 (A. Perillo Marcone):

- Both TDIS presently installed in the machine still have the non-conform bellows
- No spare modules are available before September 2024
- The installed TDIS will be swapped with the spares with new bellows in the YETS24/25

Proposal for new parking position:

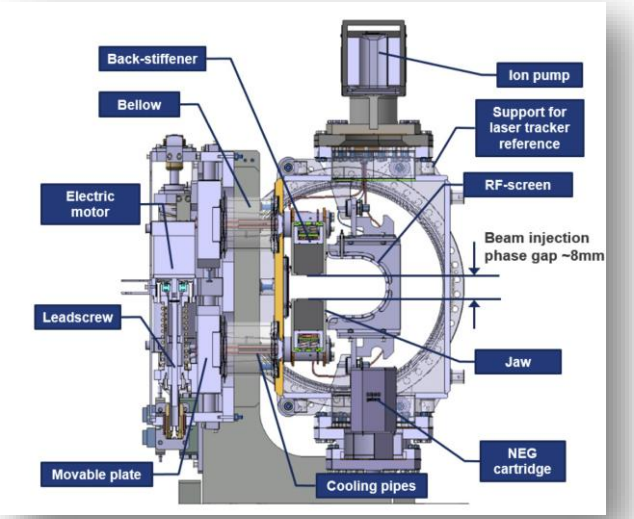
- It is expected that the non-conform bellows can sustain 2024 operation
- Nevertheless, to reduce the stress on the bellows we propose to reduce the parking position (**half-gap**) from **55 mm** to **40 mm** *for proton operation (not Pb)*

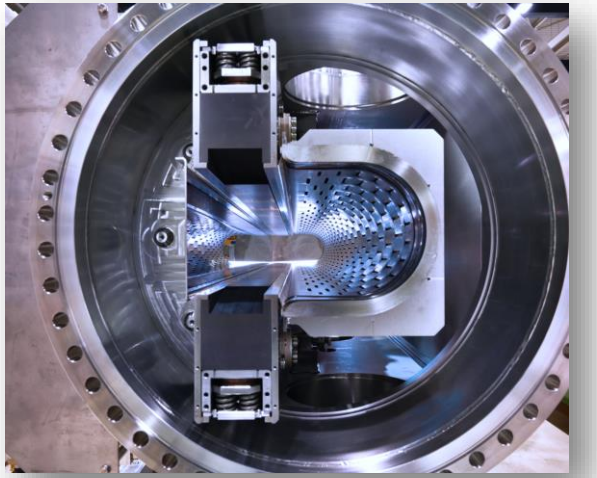


→ Reduces risk since 2024 will be a long operational year

General remarks on the parking position

- Once injection is finished, the TDIS does not have any machine protection role for the rest of the cycle → jaws can be retracted to the parking
- The choice of the nominal TDIS parking position (55 mm half-gap) is governed by the acceptance of the ALICE ZDC **for Pb operation** (→ requires a shadow-free region for spectator neutrons)
- For proton operation, ALICE does not require the same gap → 40 mm is OK for protons* <u>except</u> for pp VdM scans, where ALICE still requires the 55 mm half-gap





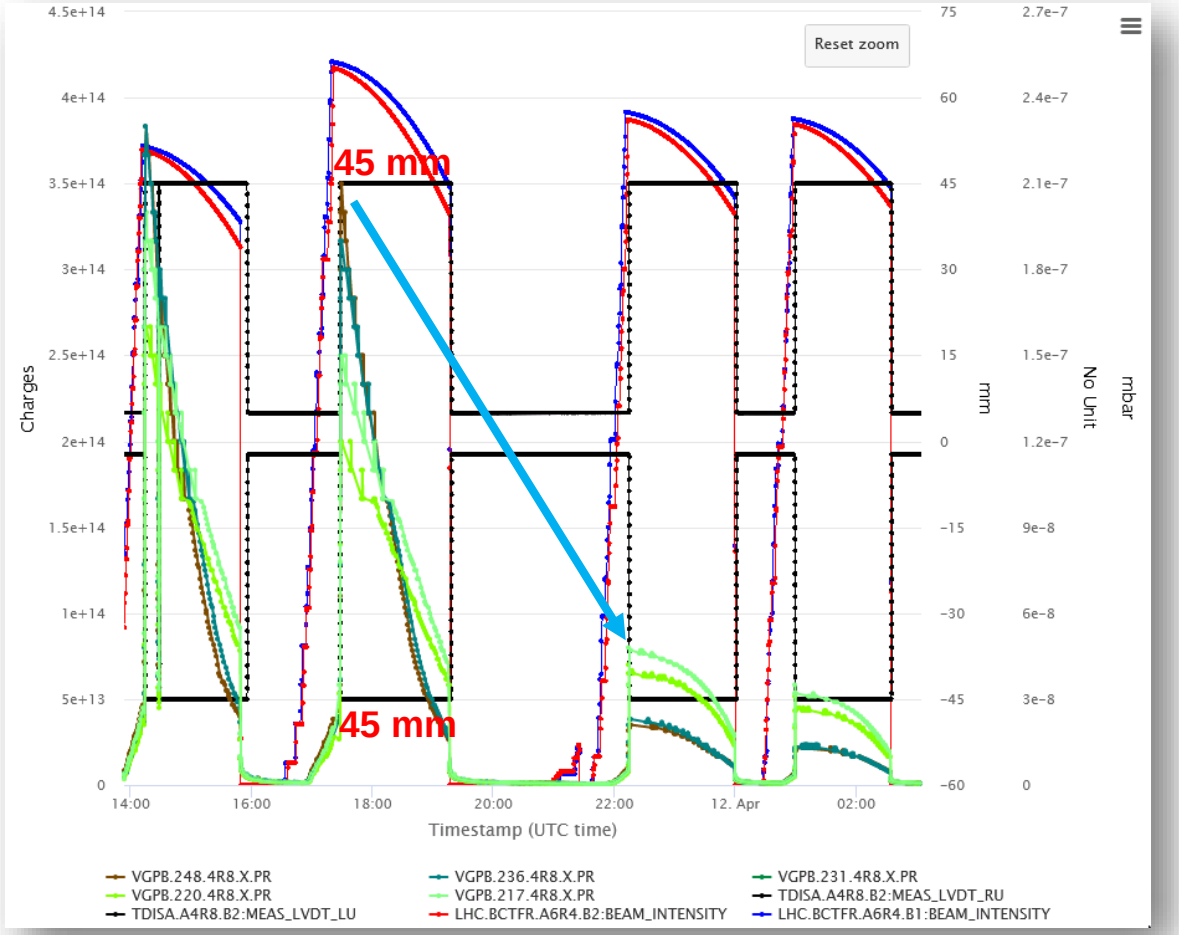
* If the vacuum levels remain acceptable in terms of beam-induced background

TDIS parking: e-cloud

Electron cloud (from L. Mether):

- Strongest e-cloud is expected with half-gaps of 35-45 mm (see also CERN-ACC-NOTE-2018-0060)
- For this reason, a dedicated half-gap of **45 mm was used during the scrubbing run** to condition the areas as much as possible
- The scrubbing run showed that is possible to have a full machine with this half-gap without issues (at injection)
- Similarly, no issues are expected when using such a gap in physics

Vacuum levels in TDIS.04R8 region during scrubbing run:



Very similar in IR2

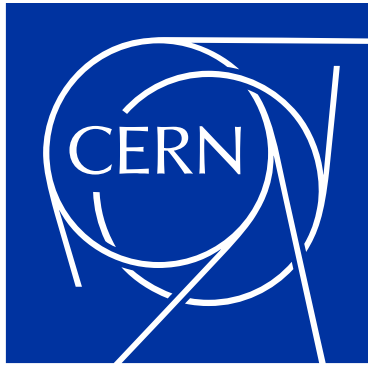
TDIS parking: impedance and aperture

Impedance:

- See talk of Lorenzo

Aperture:

- See talk of Riccardo



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Vacuum in TDIS region in recent 2000b fill (19/04/24)