



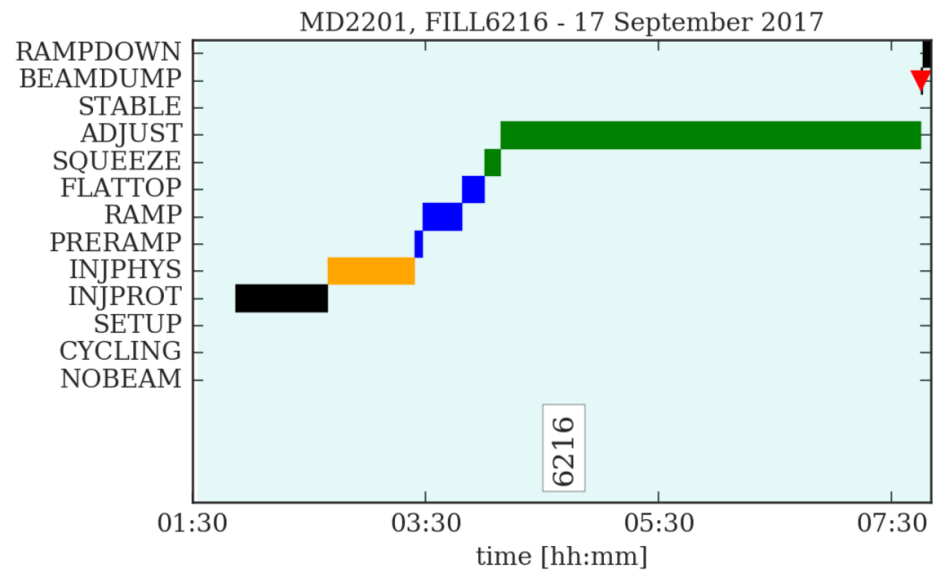
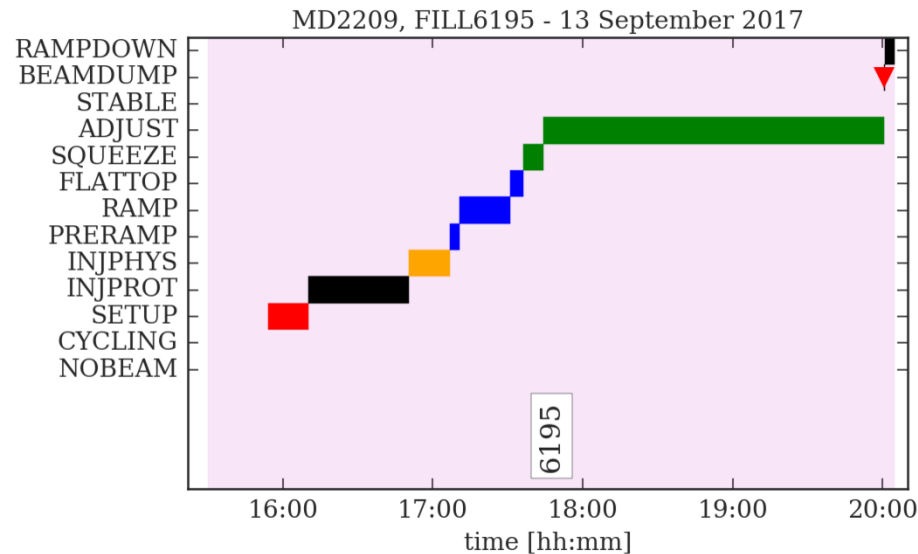
## Preliminary results of MD2201 (FILL6216) and MD2209 (FILL6195)

FILL6195: <https://cernbox.cern.ch/index.php/s/WdGB5FggrQT7tPA>

FILL6216: <https://cernbox.cern.ch/index.php/s/WdGB5FggrQT7tPA>

K. Skoufaris, Y. Papaphilippou, A. Rossi, S. Fartoukh, G. Iadarola, D. Pellegrini, K. Karastatis, A. Poyet, G. Sterbini, S. Papadopoulou, M. Fitterer, M. Solfaroli, M. Pojer, K. Fuchsberger, M. Albert, G.-H. Hemelsoet, M. Hostettler, B. Salvachua, L. Carver, N. Fuster, S. Redaelli, M. Gonzales, G. Trad, M. Gasior, S. Kostoglou, C. Zamatzas, A. Gorzawski, D. Valuch, E. Effinger, D. Mirarchi, R. Tomas, and a many more.

# A snapshot of the beam modes

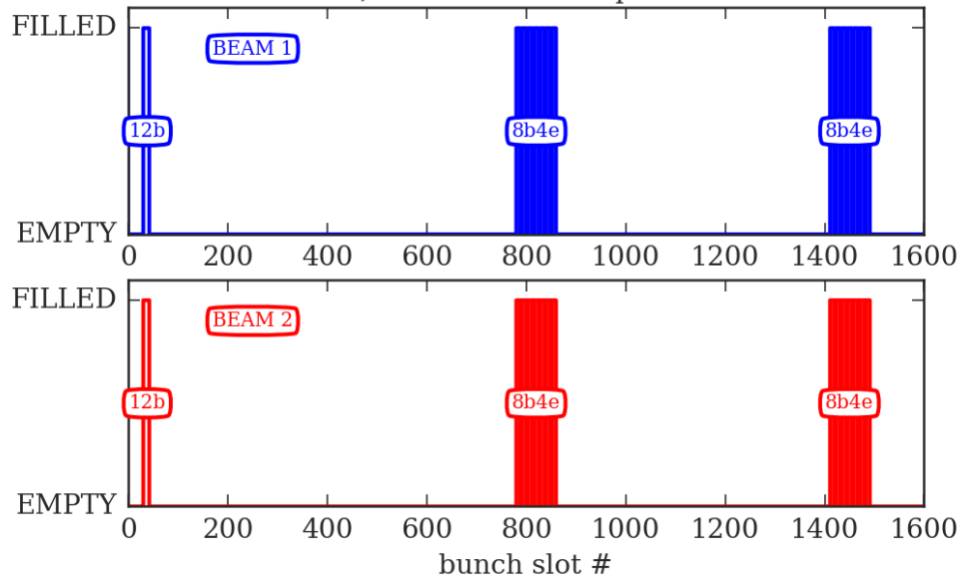


AIM: evaluate the **BB long range effects as function of the crossing angle and bunch intensity** for the BCMS and the 8b4e with ATS optics (40 cm).

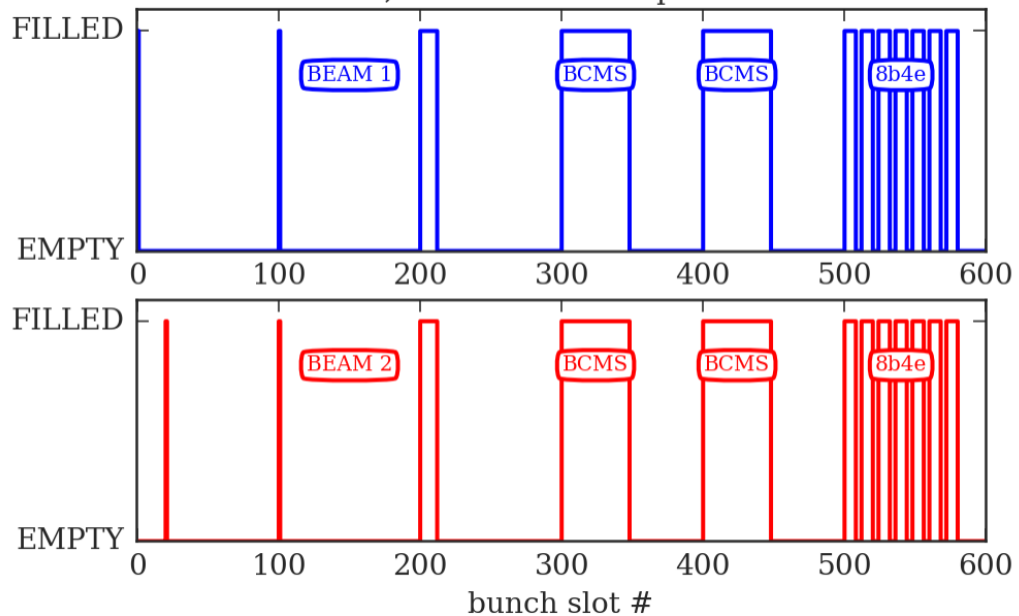
In the past several MDs (e.g. MD 1429) to study these important effect. This year available the **orchestration of the crossing angle scan developed by OP: very smooth running.**

# Filling schemes

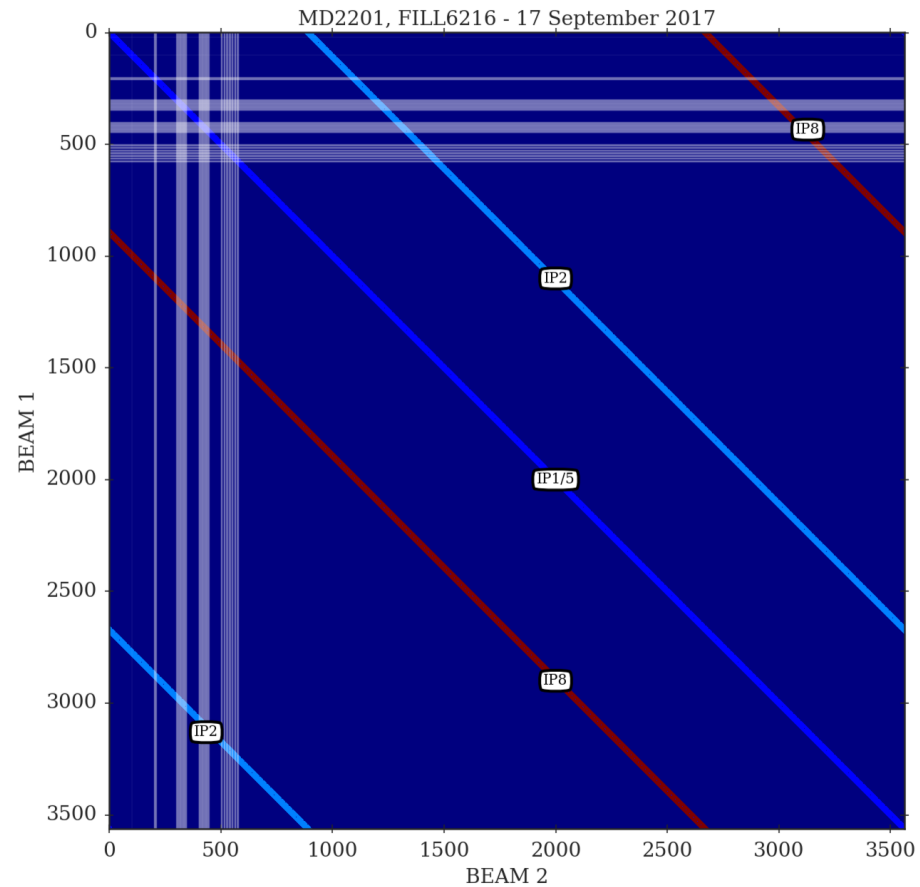
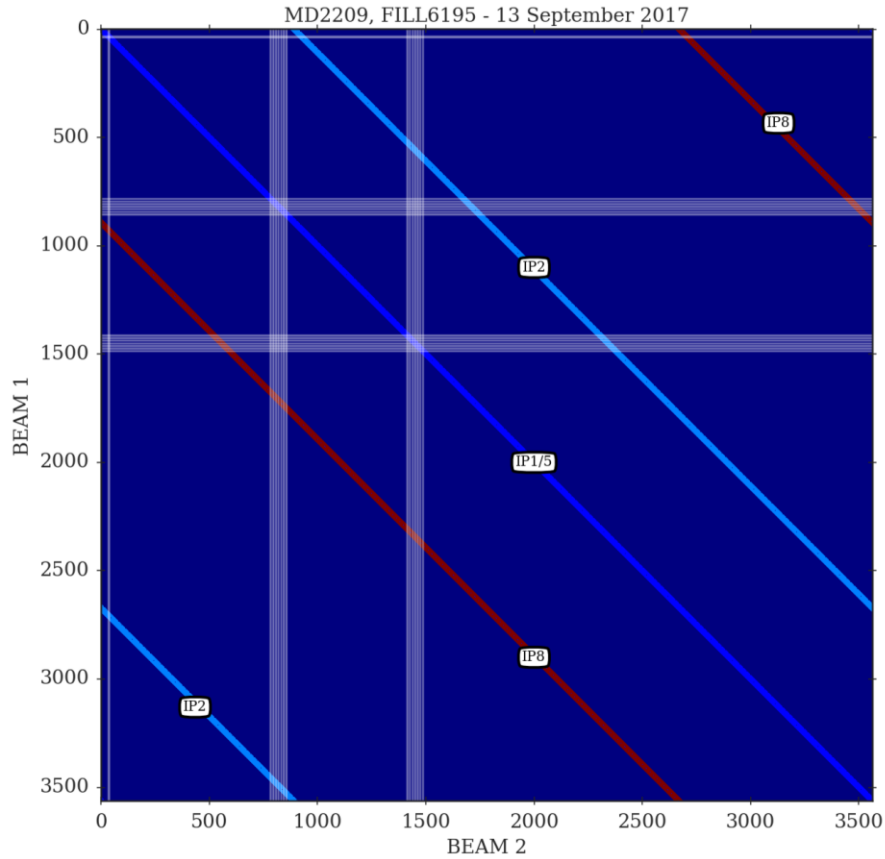
MD2209, FILL6195 - 13 September 2017



MD2201, FILL6216 - 17 September 2017

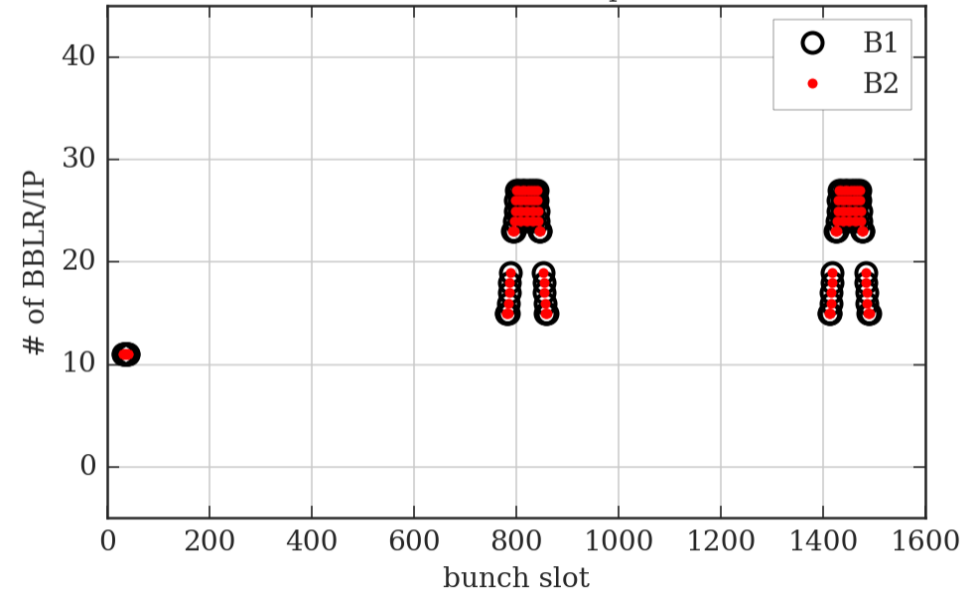


# BB matrix

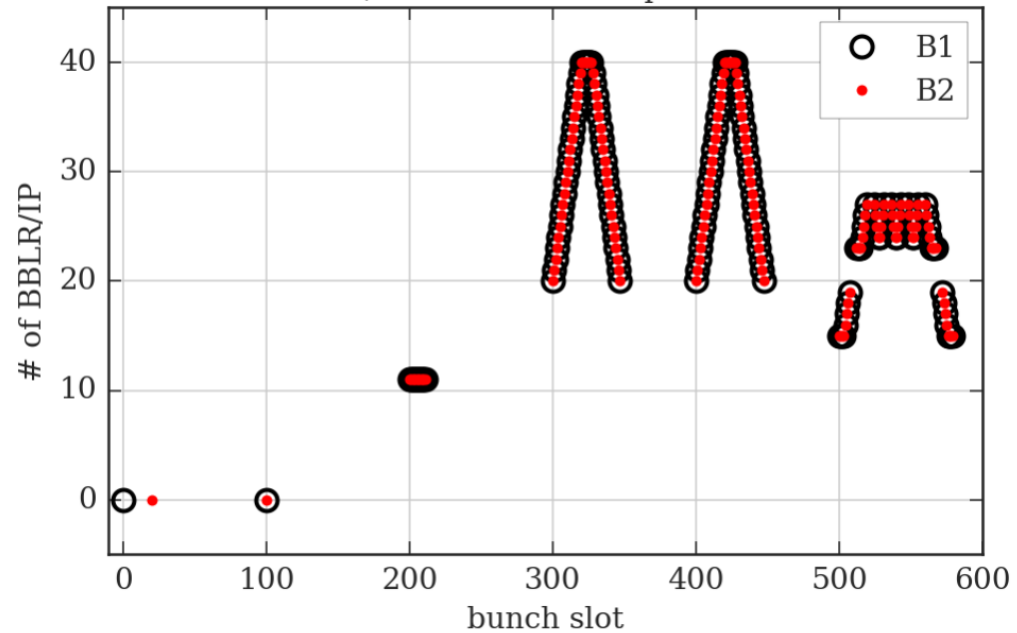


# BB matrix

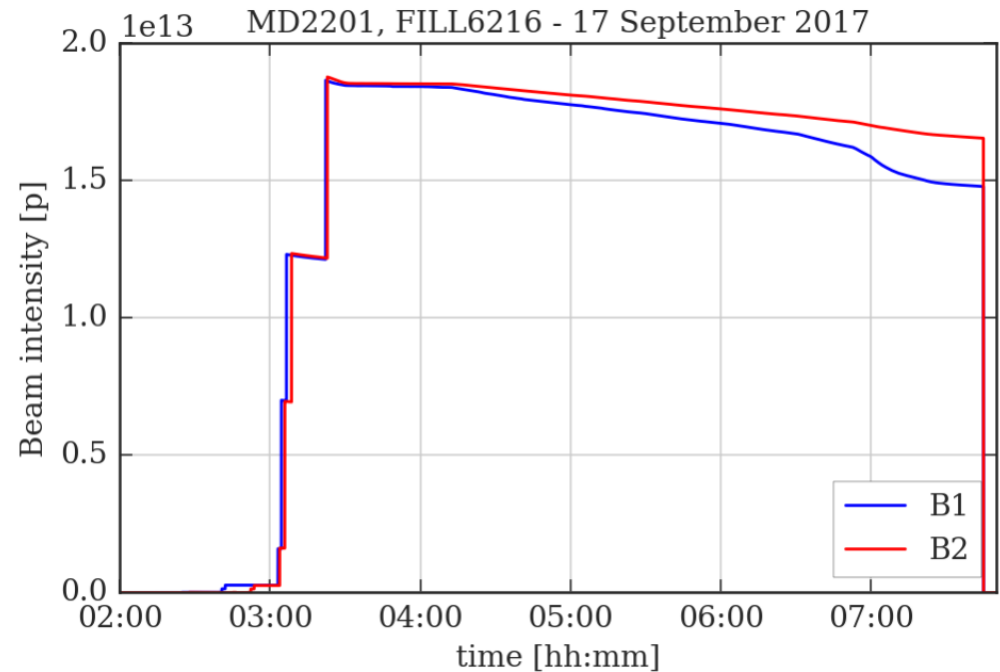
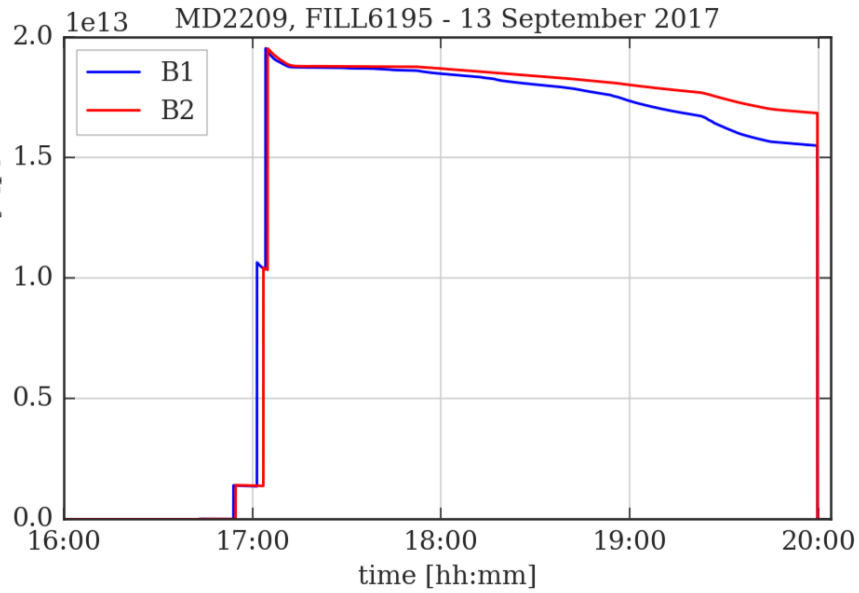
MD2209, FILL6195 - 13 September 2017



MD2201, FILL6216 - 17 September 2017

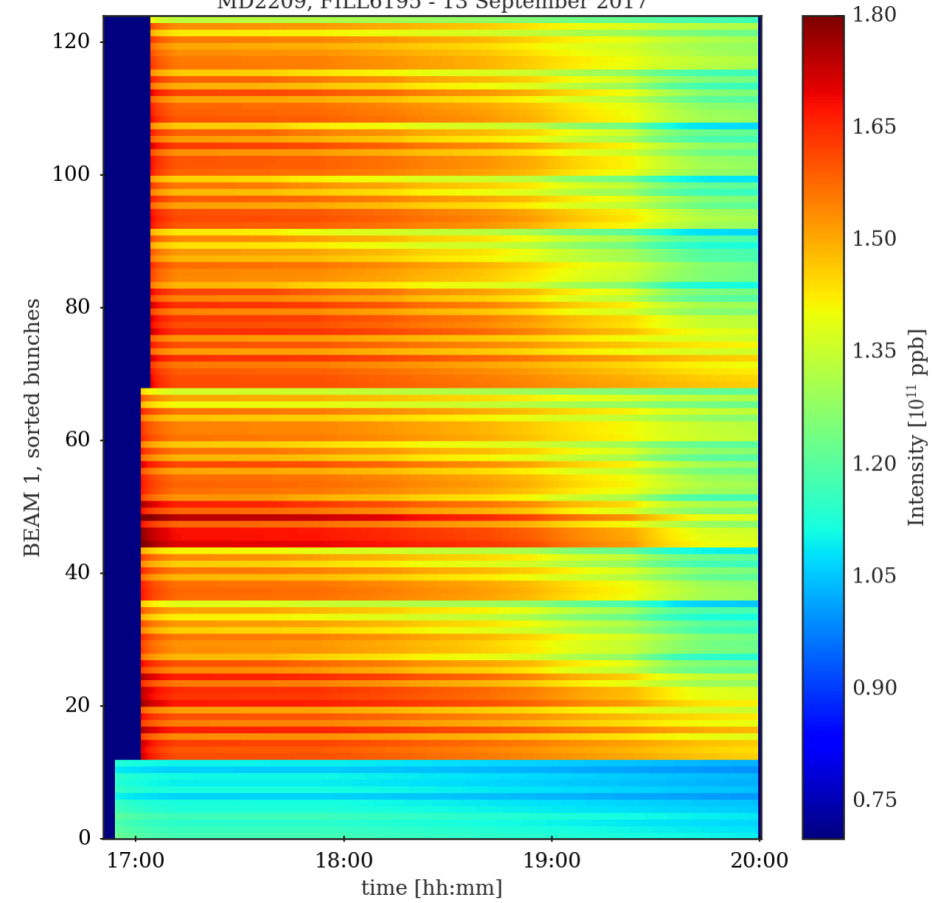


# Beam intensities

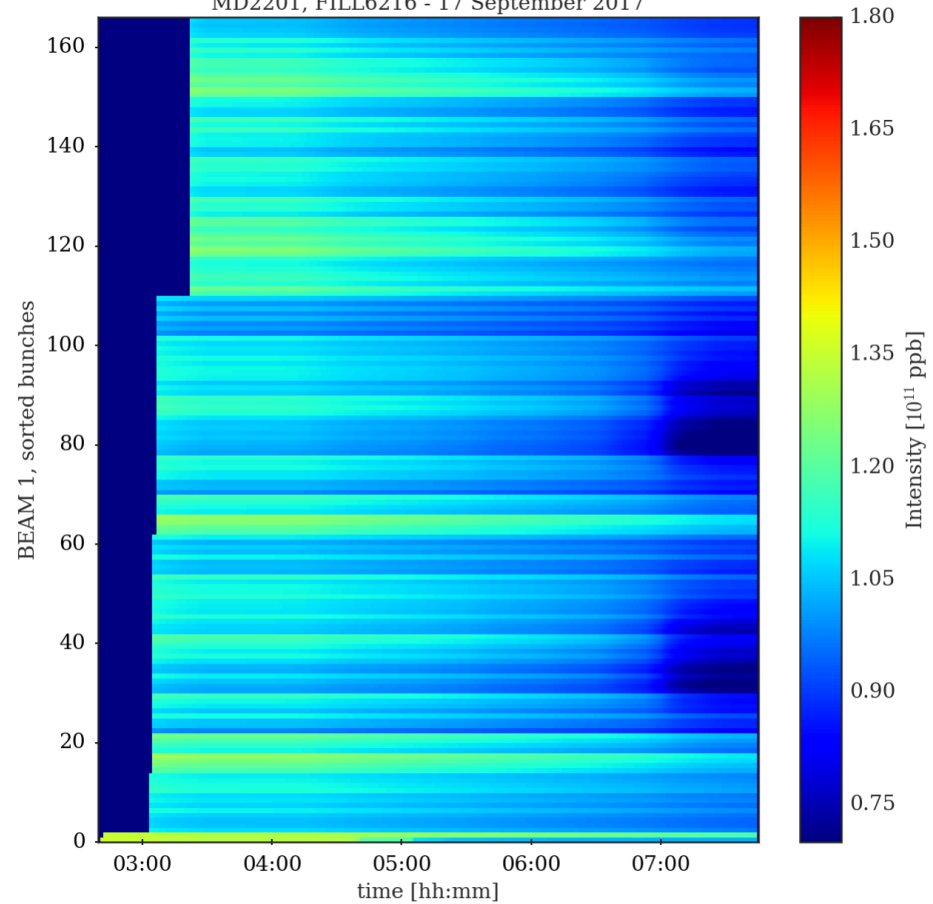


# Beam intensities

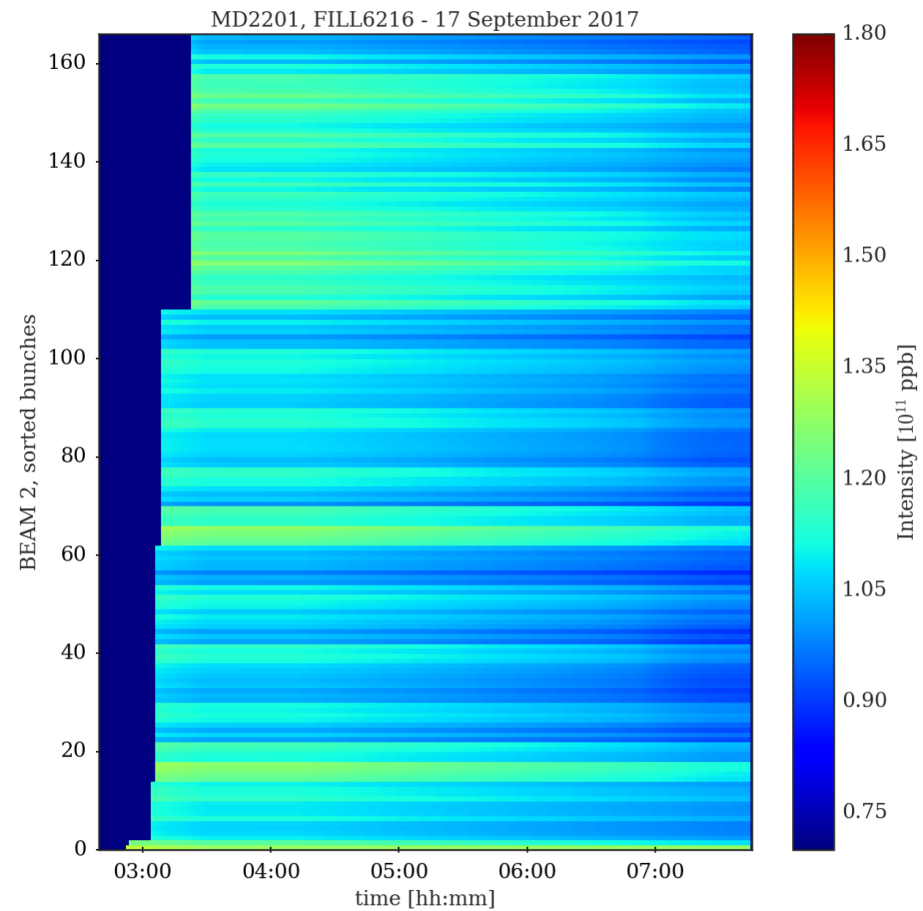
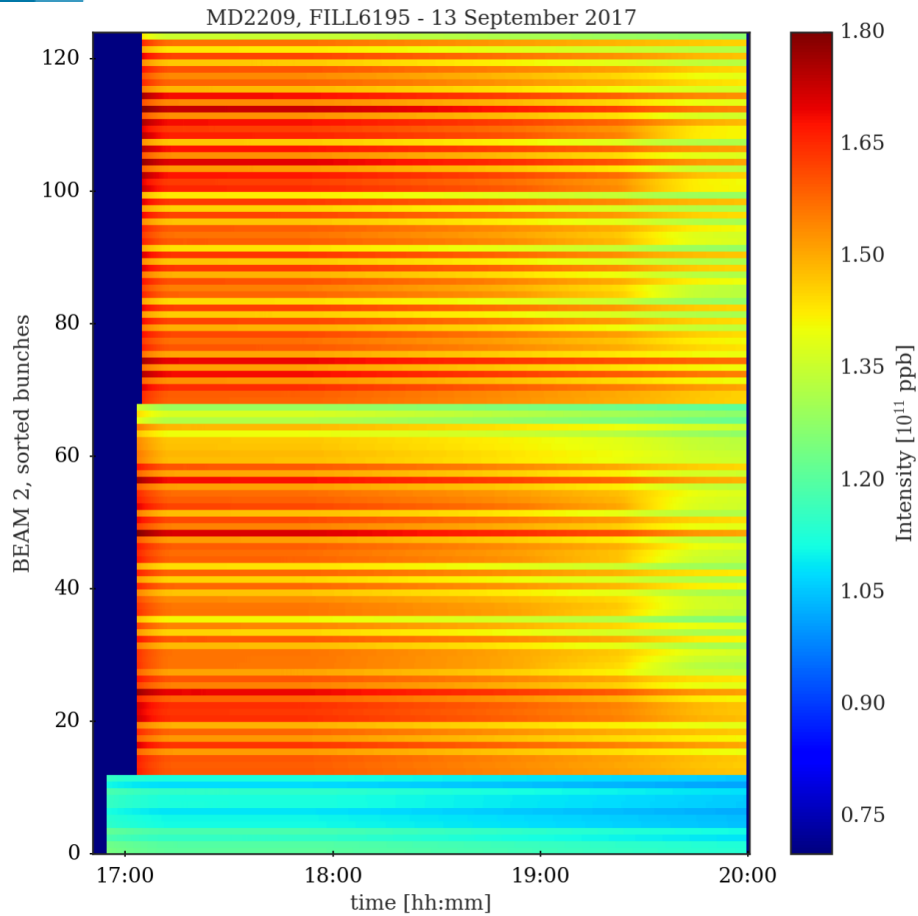
MD2209, FILL6195 - 13 September 2017



MD2201, FILL6216 - 17 September 2017



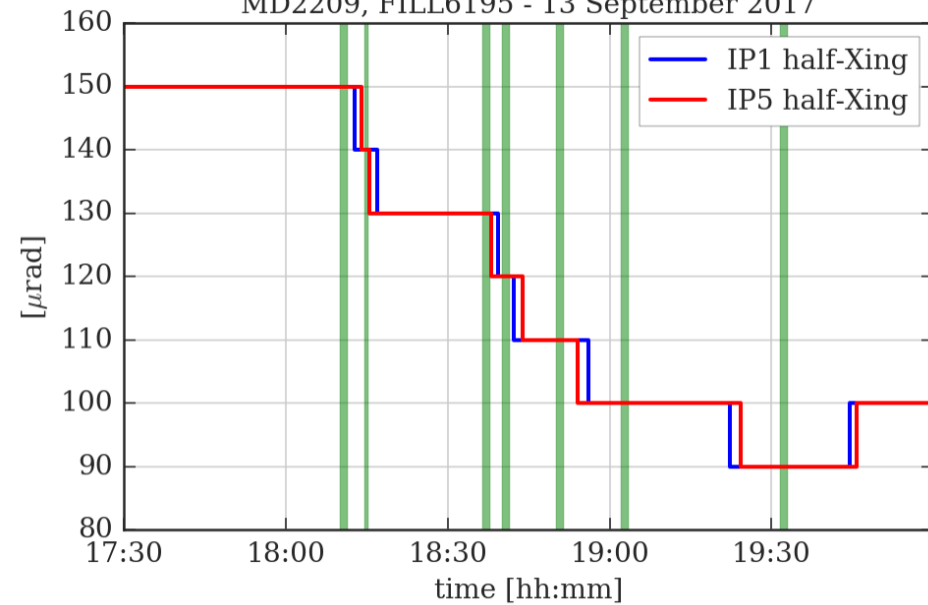
# Beam intensities



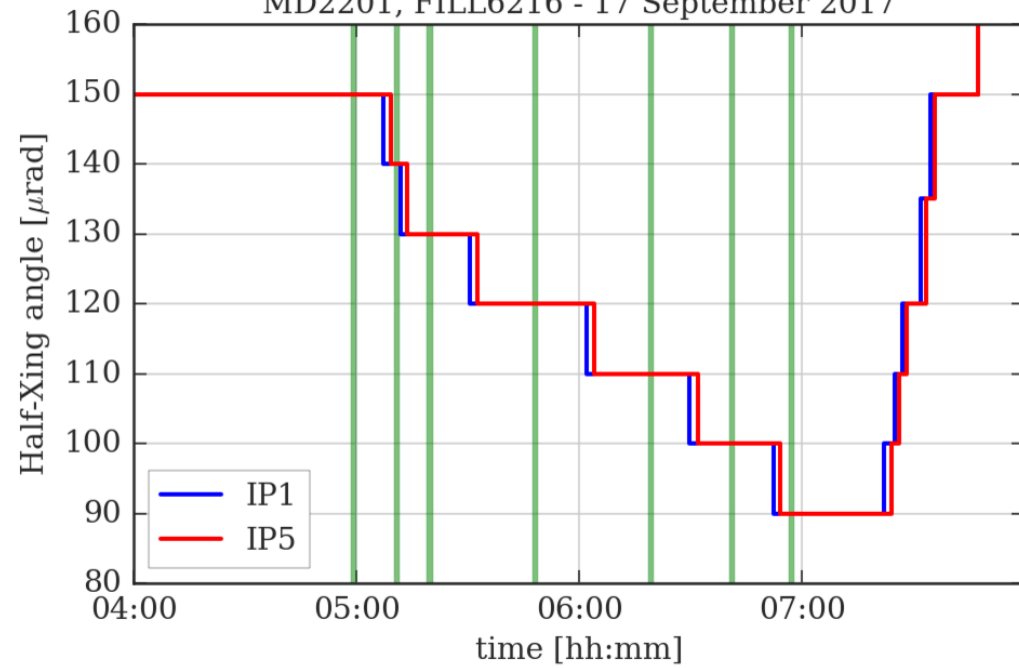


# Crossing angle

MD2209, FILL6195 - 13 September 2017

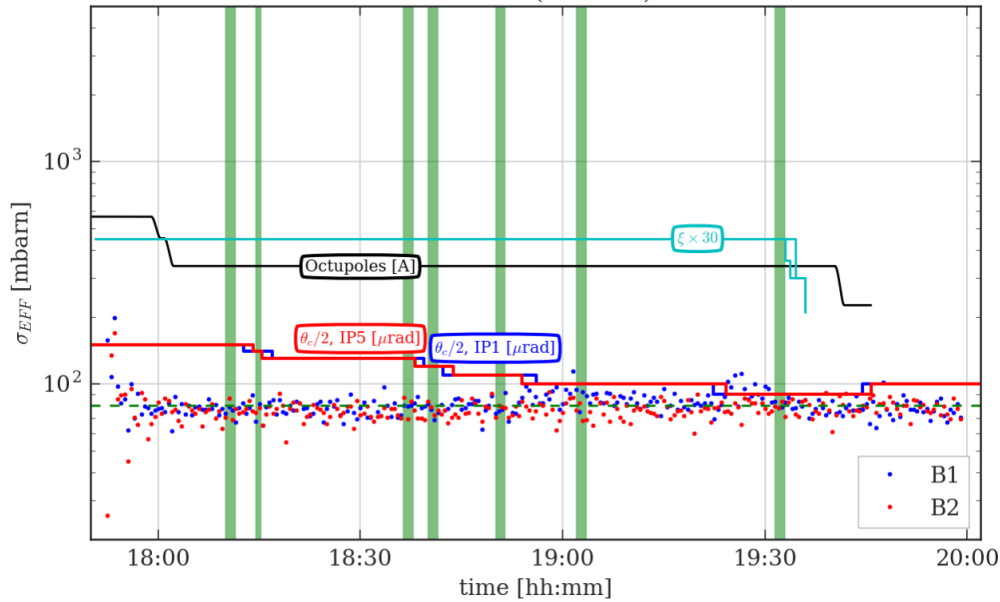


MD2201, FILL6216 - 17 September 2017

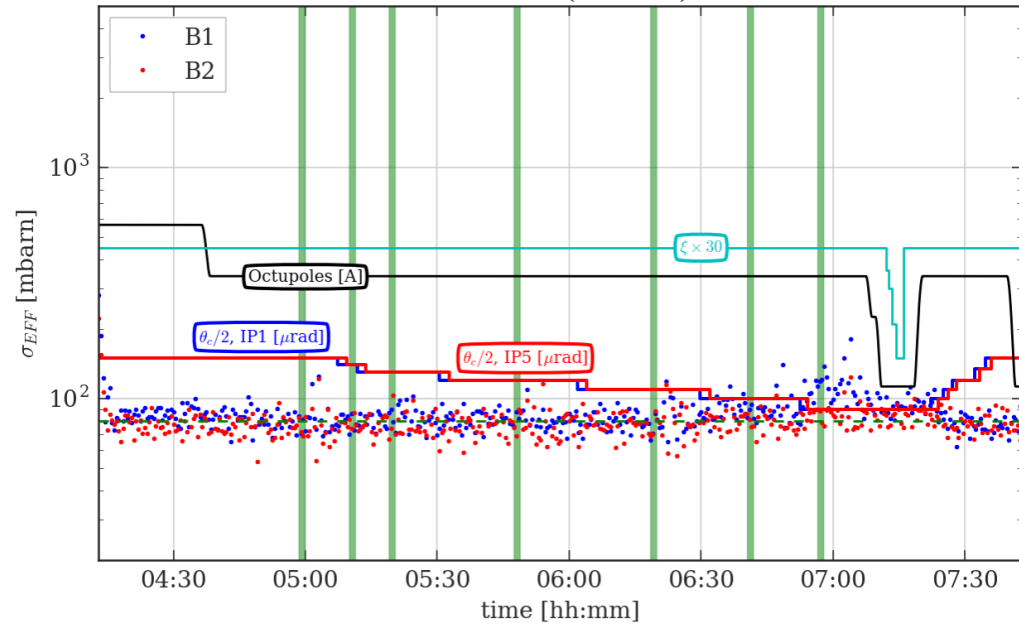


# Effective cross-section

Bunch 30 (11 BBLR)

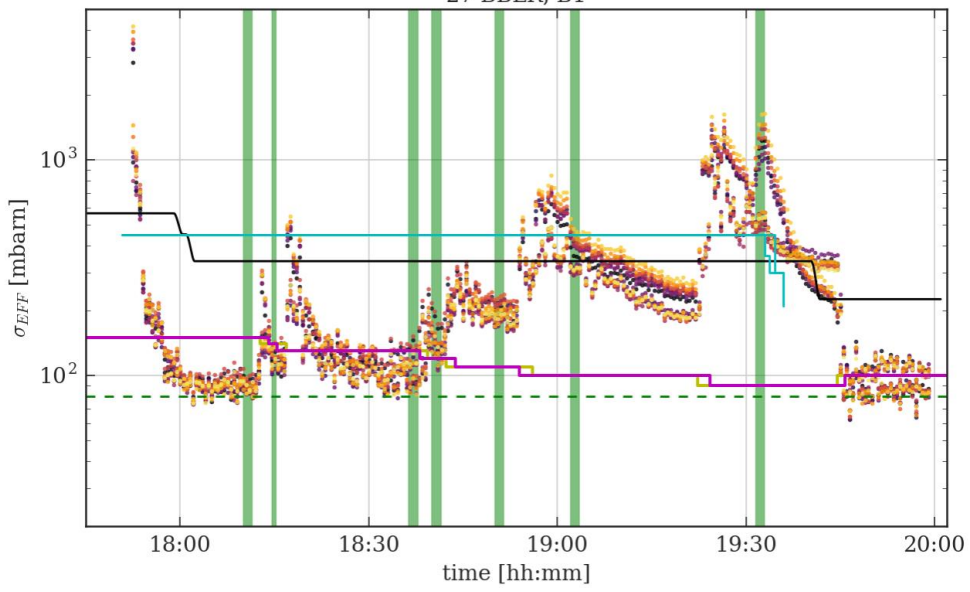


Bunch 200 (11 BBLR)

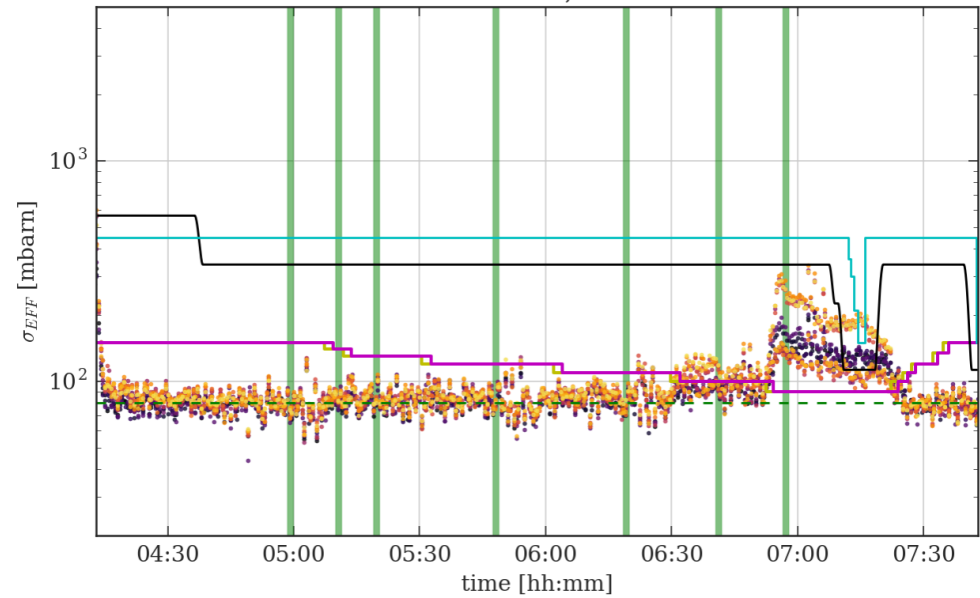


# Effective cross-section

27 BBLR, B1

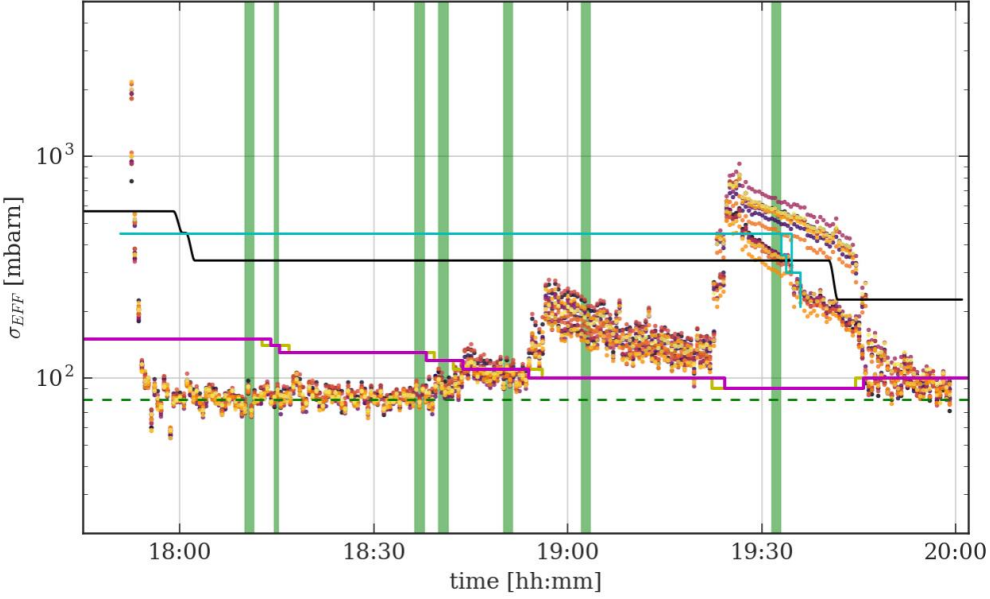


27 BBLR, B2

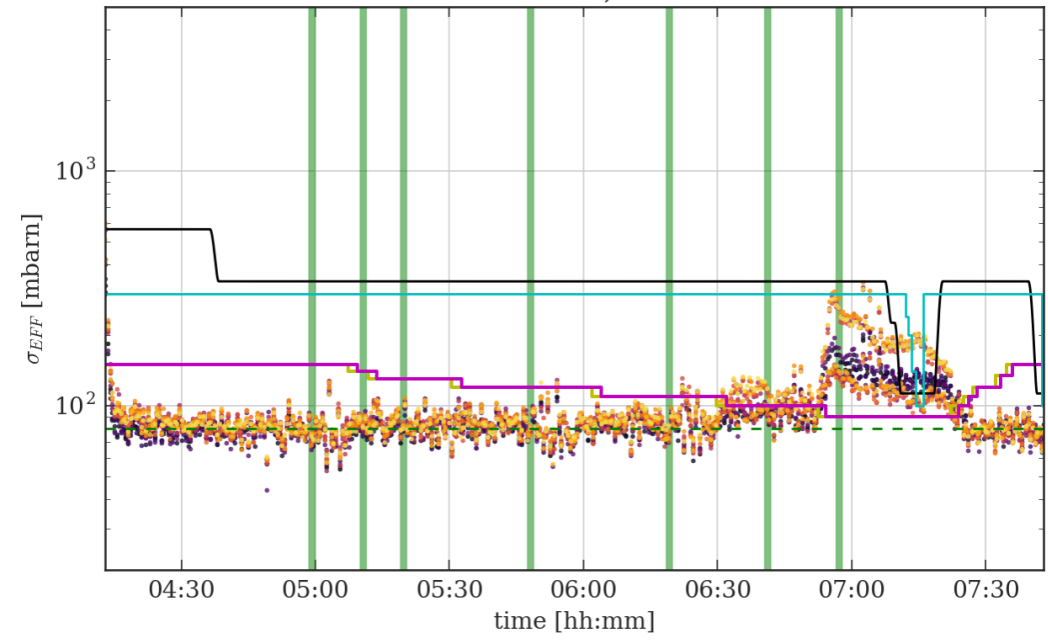


# Effective cross-section

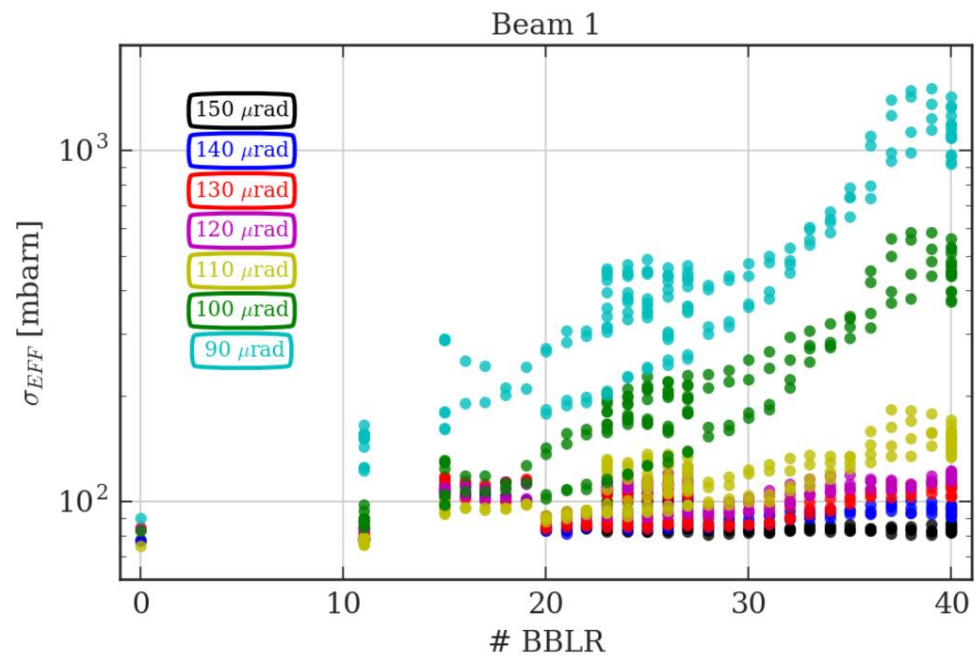
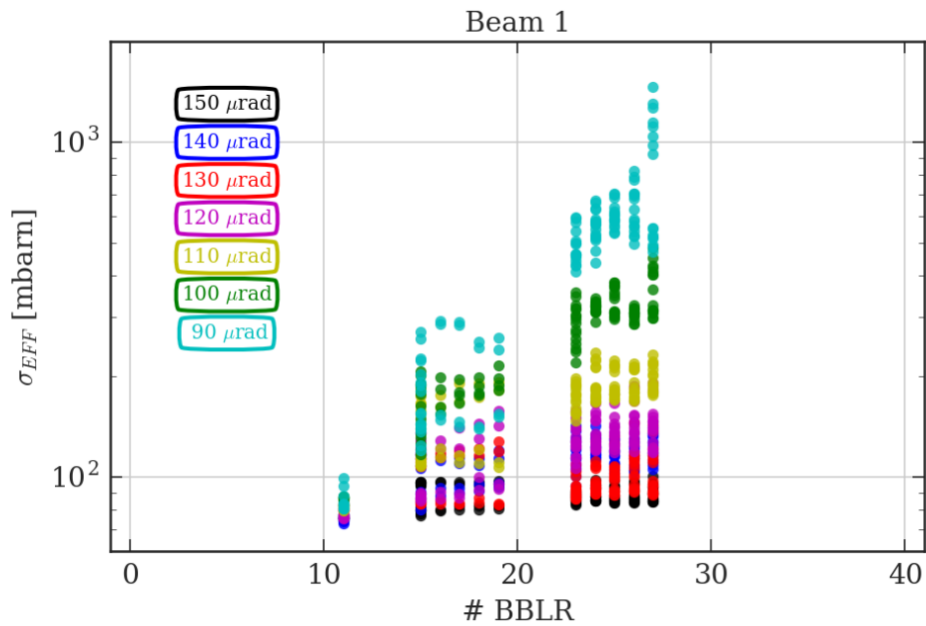
27 BBLR, B2



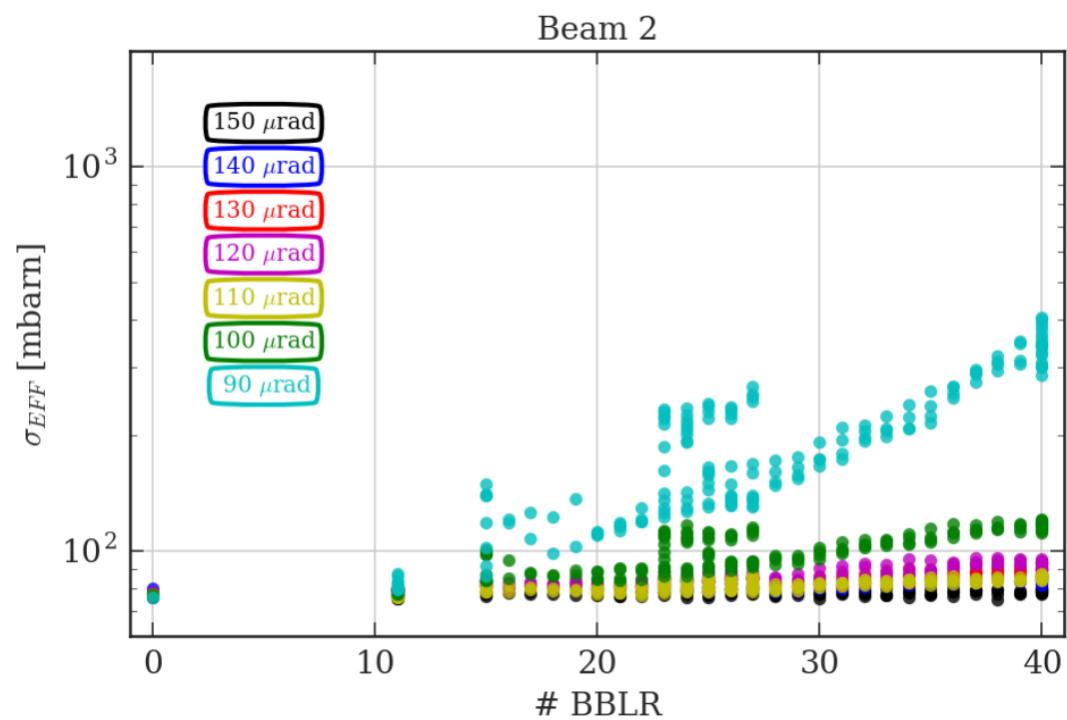
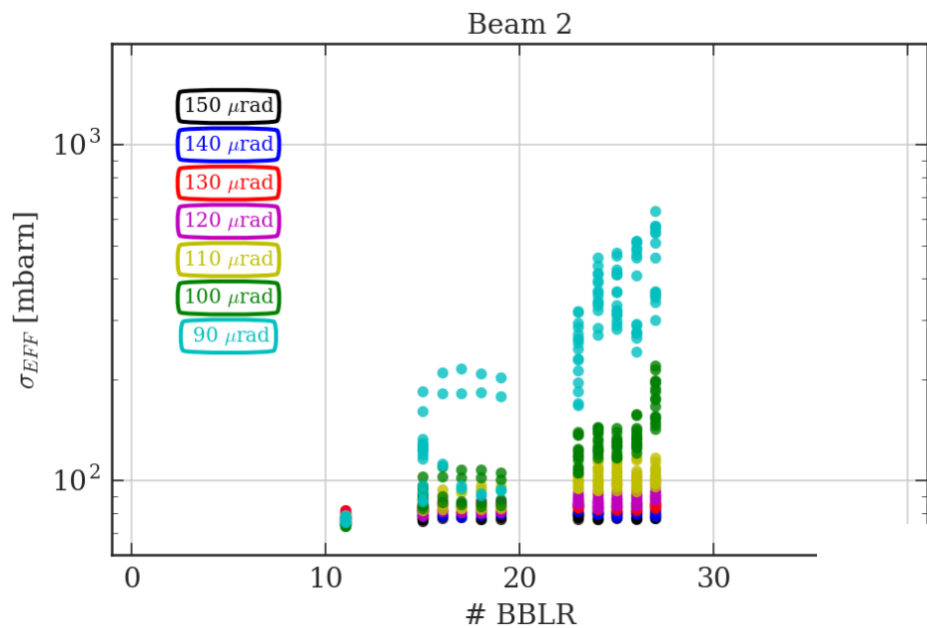
27 BBLR, B2



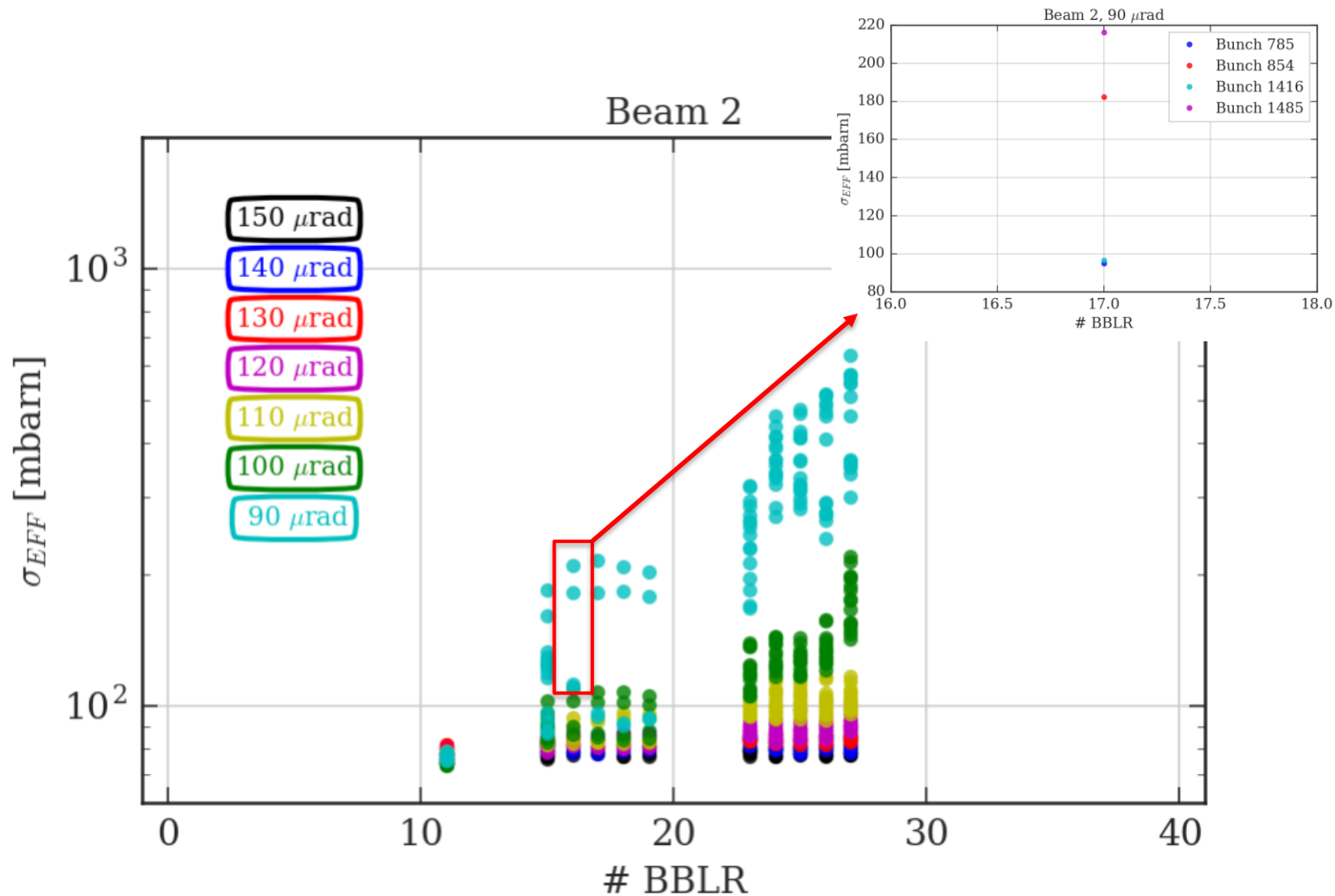
# Summary of the MD



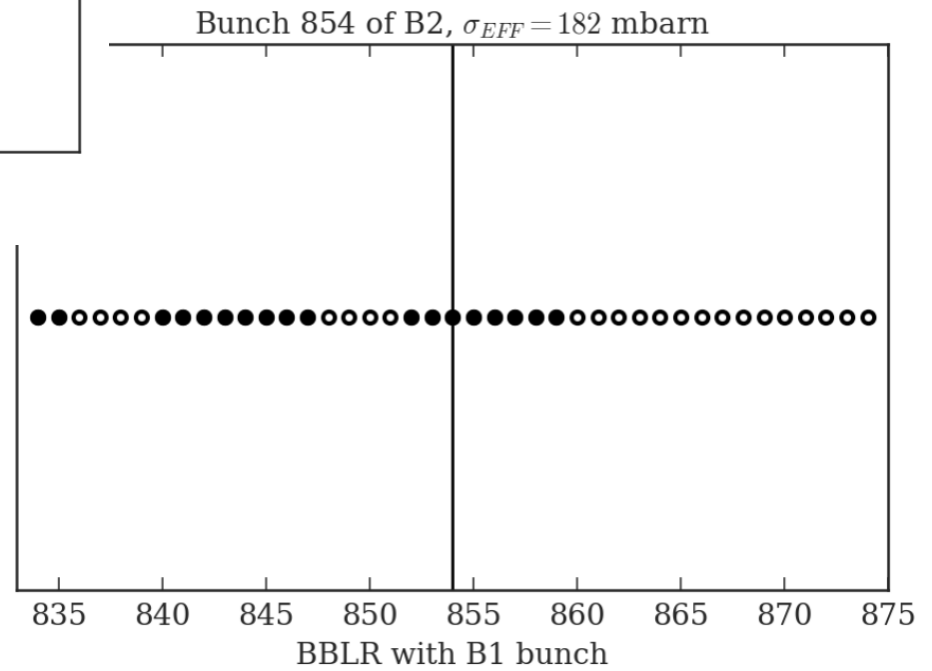
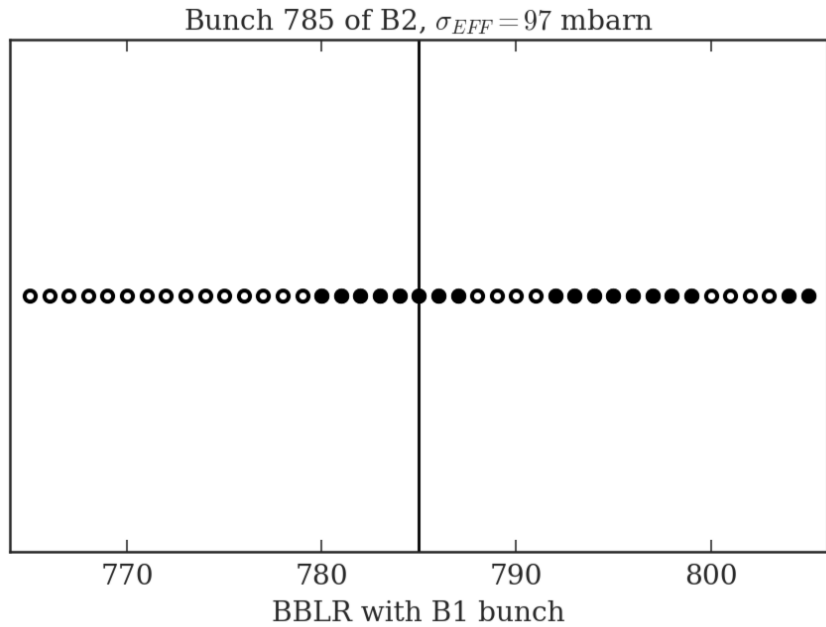
# Summary of the MD



# Summary of the MD



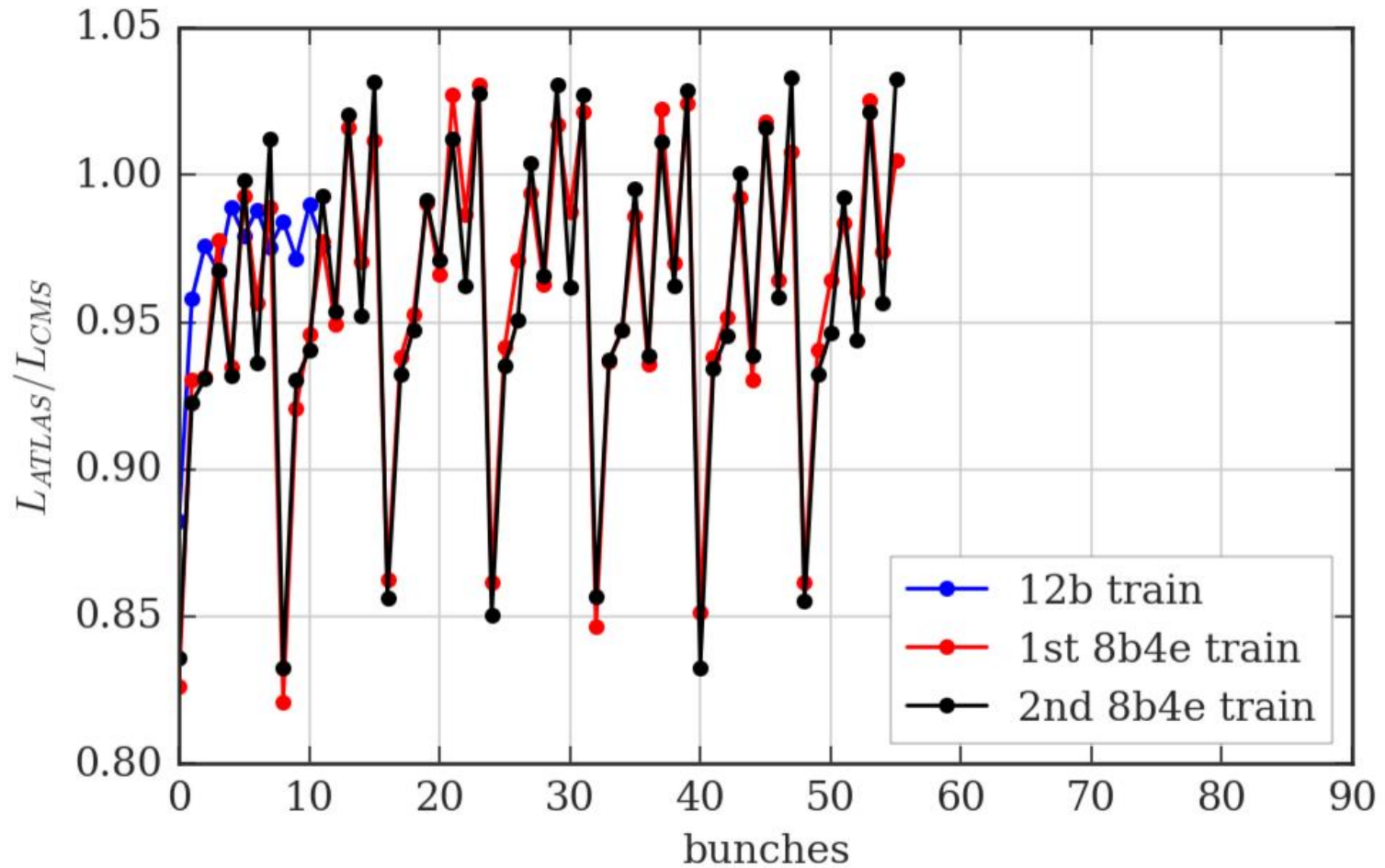
# Summary of the MD





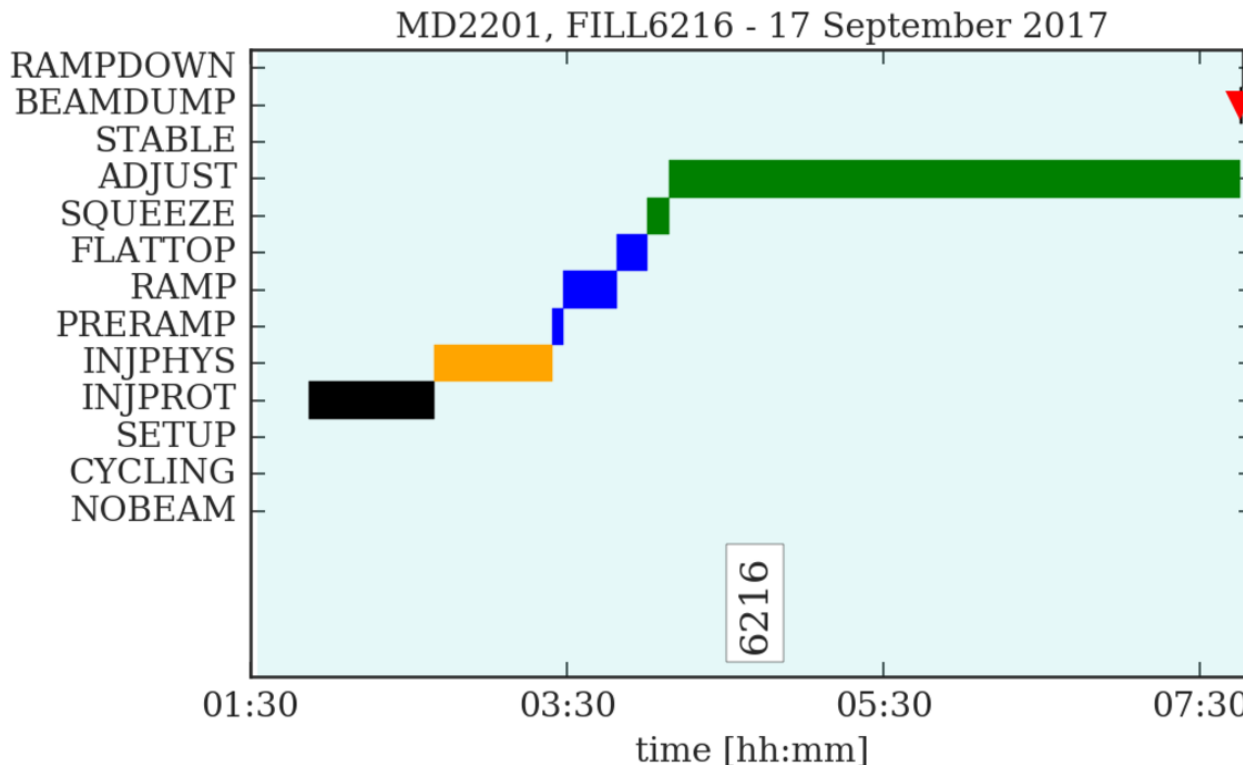
# BACKUP SLIDES

# Luminosity ratio (II)

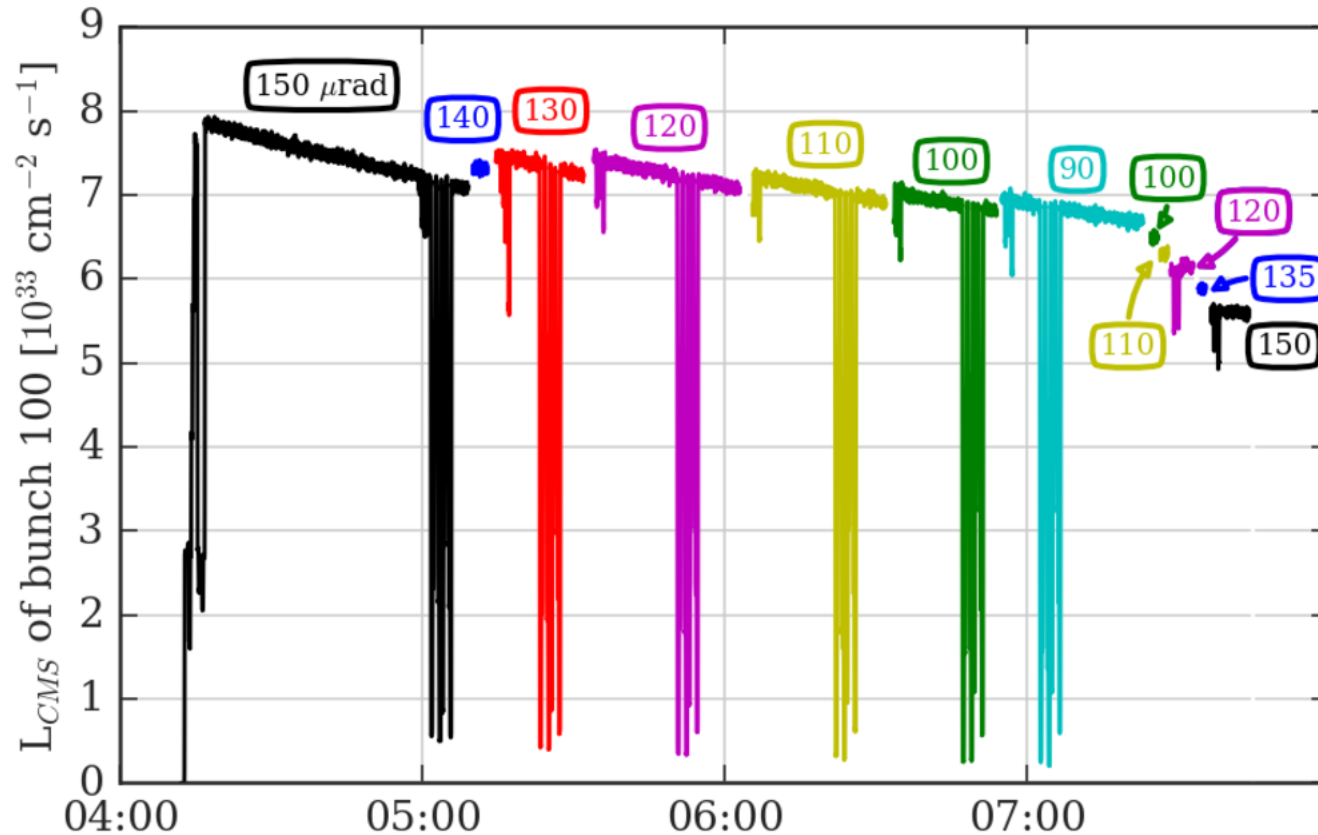


# MD2201

- AIM: evaluate the BB long range effects as function of the crossing angle for the BCMS and the 8b4e with ATS optics (40 cm).
- In the past several MDs (e.g. MD 1429) to study these important effect. This year available the **orchestration of the crossing angle scan developed by OP**.
- 6 h: from 2am to 8 am: **very smooth running**.

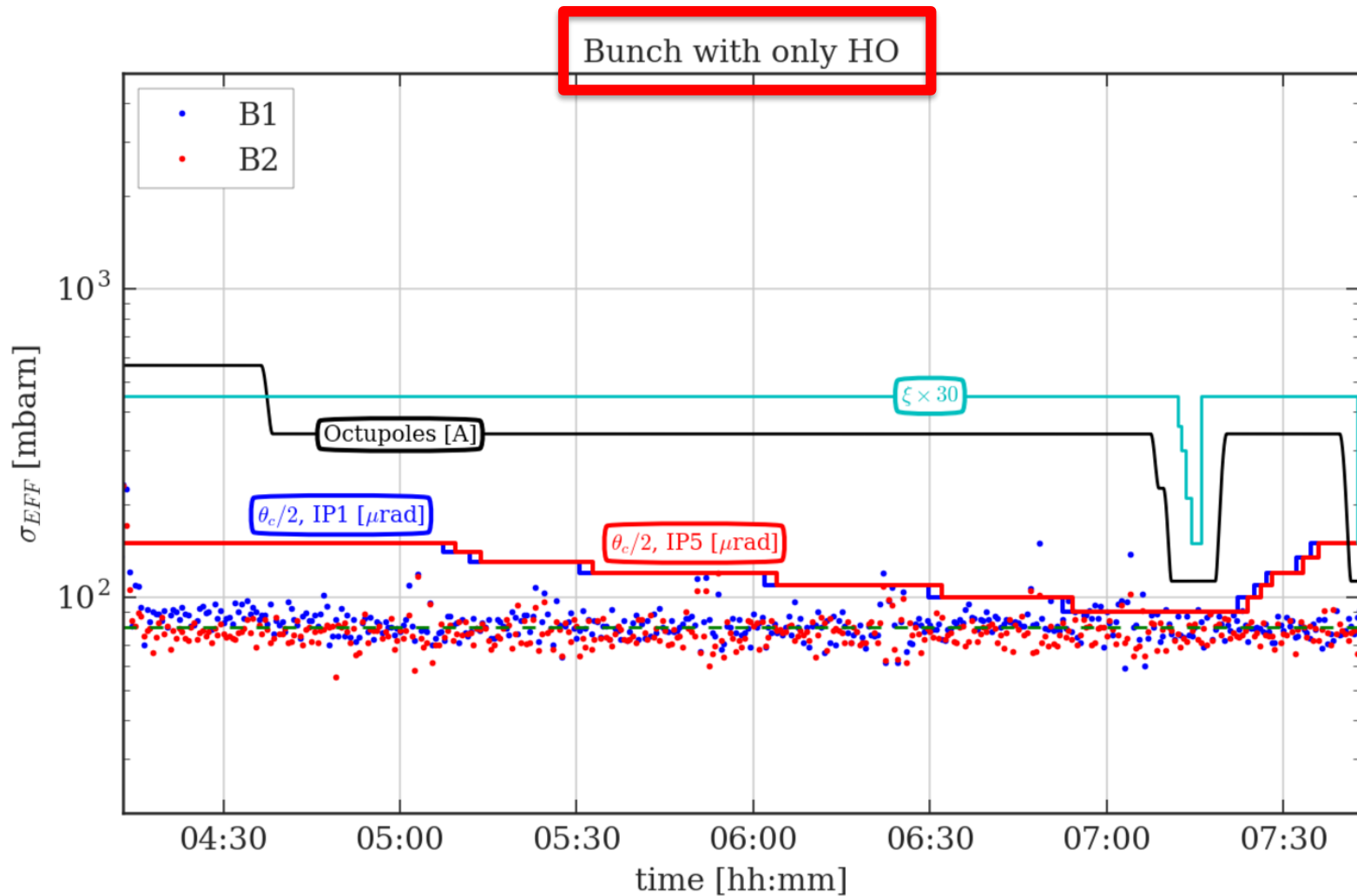


# Crossing angle scan



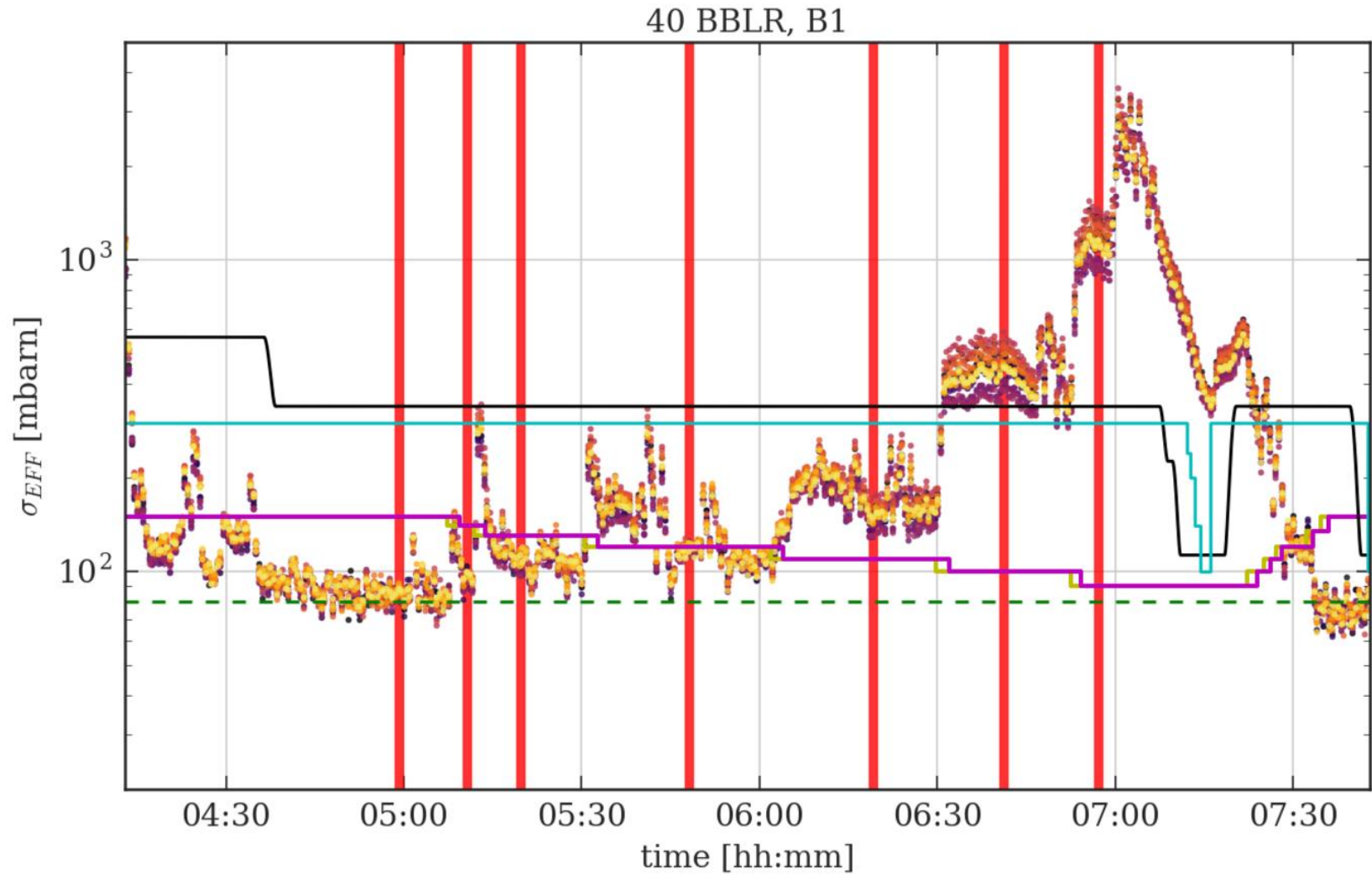
- Systematic scans of crossing angle (from 150 to 90 urad).
- For each step: Lumi + Q optimization, emittance scan.
- At 90 urad, octupoles and chromaticity were reduced.

# Preliminary results



- Main observable adopted is the pp effective cross section.

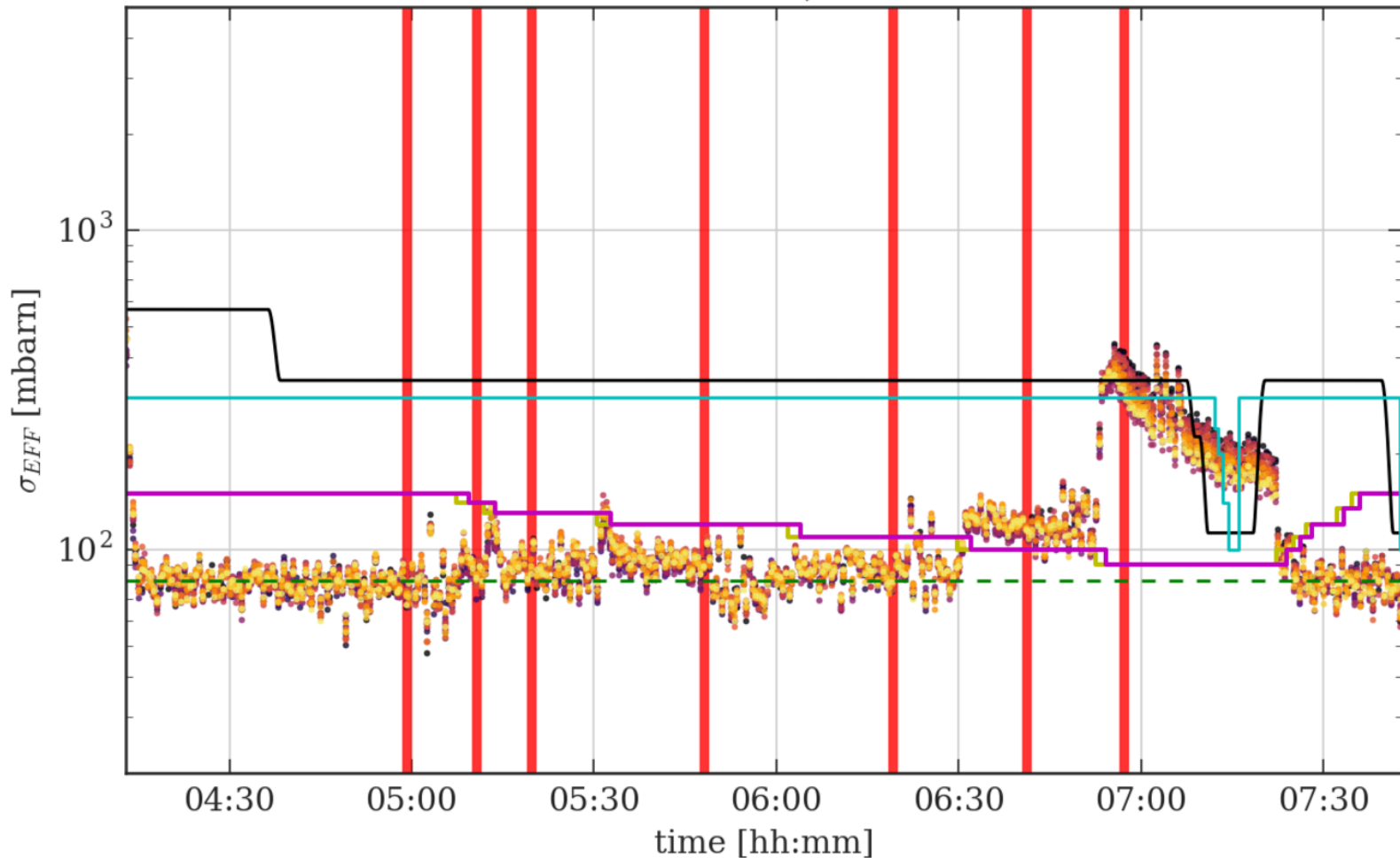
# Preliminary results



- Effect of the octupoles and chromaticity on B1.

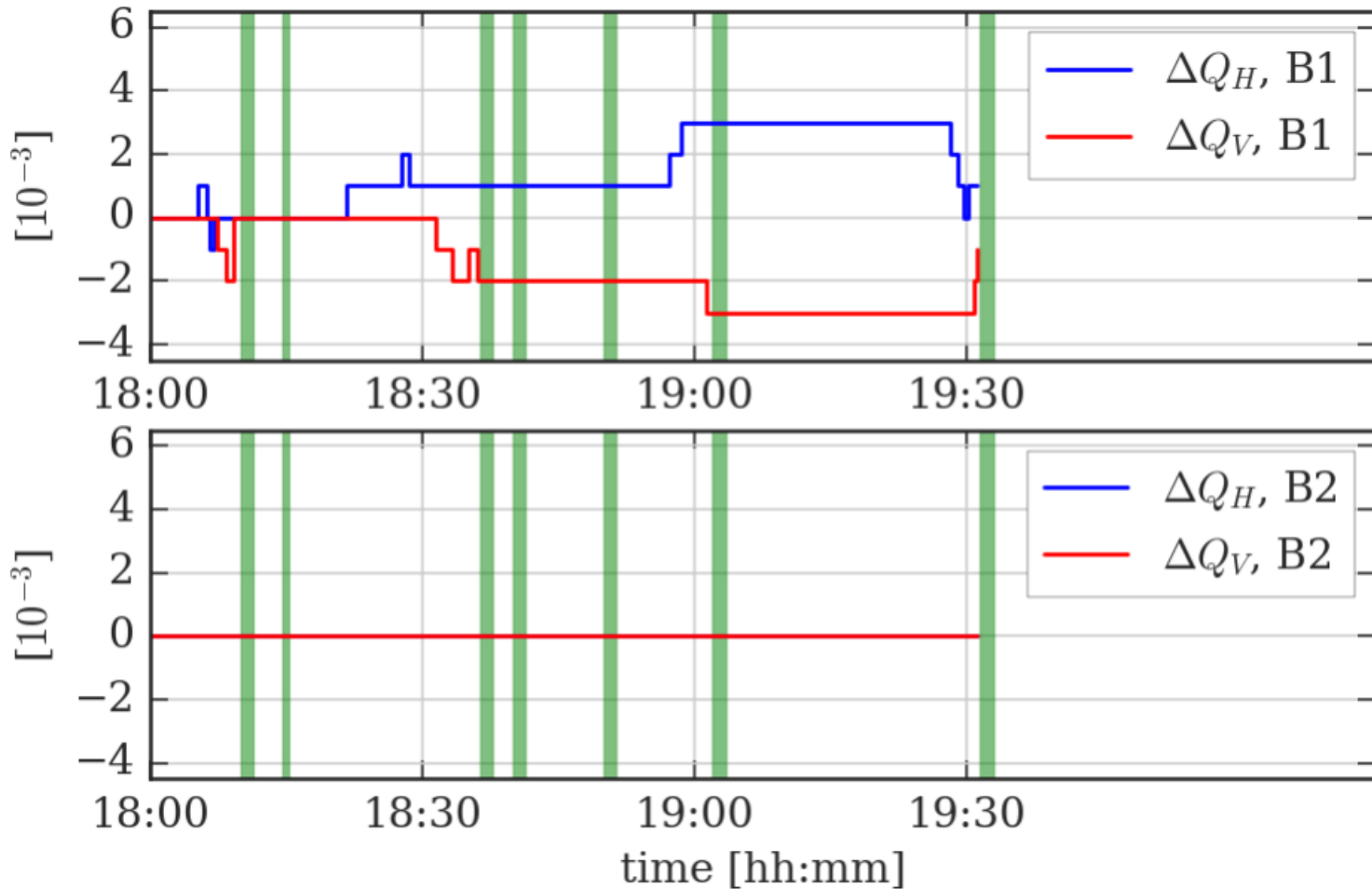
# Preliminary results

40 BBLR, B2



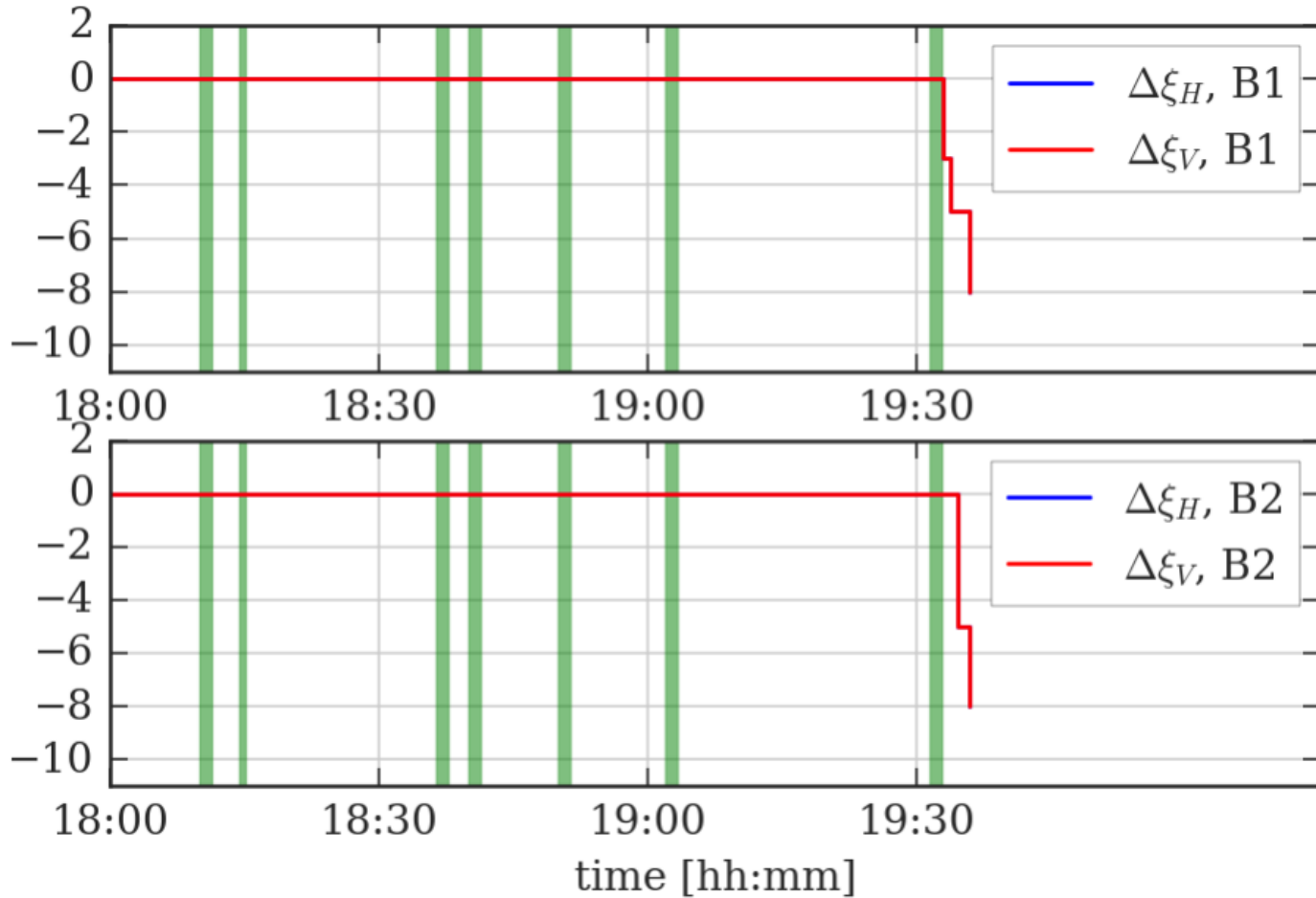
- B2, as observed in the past, much more resilient to LRBB.

# Tune trims

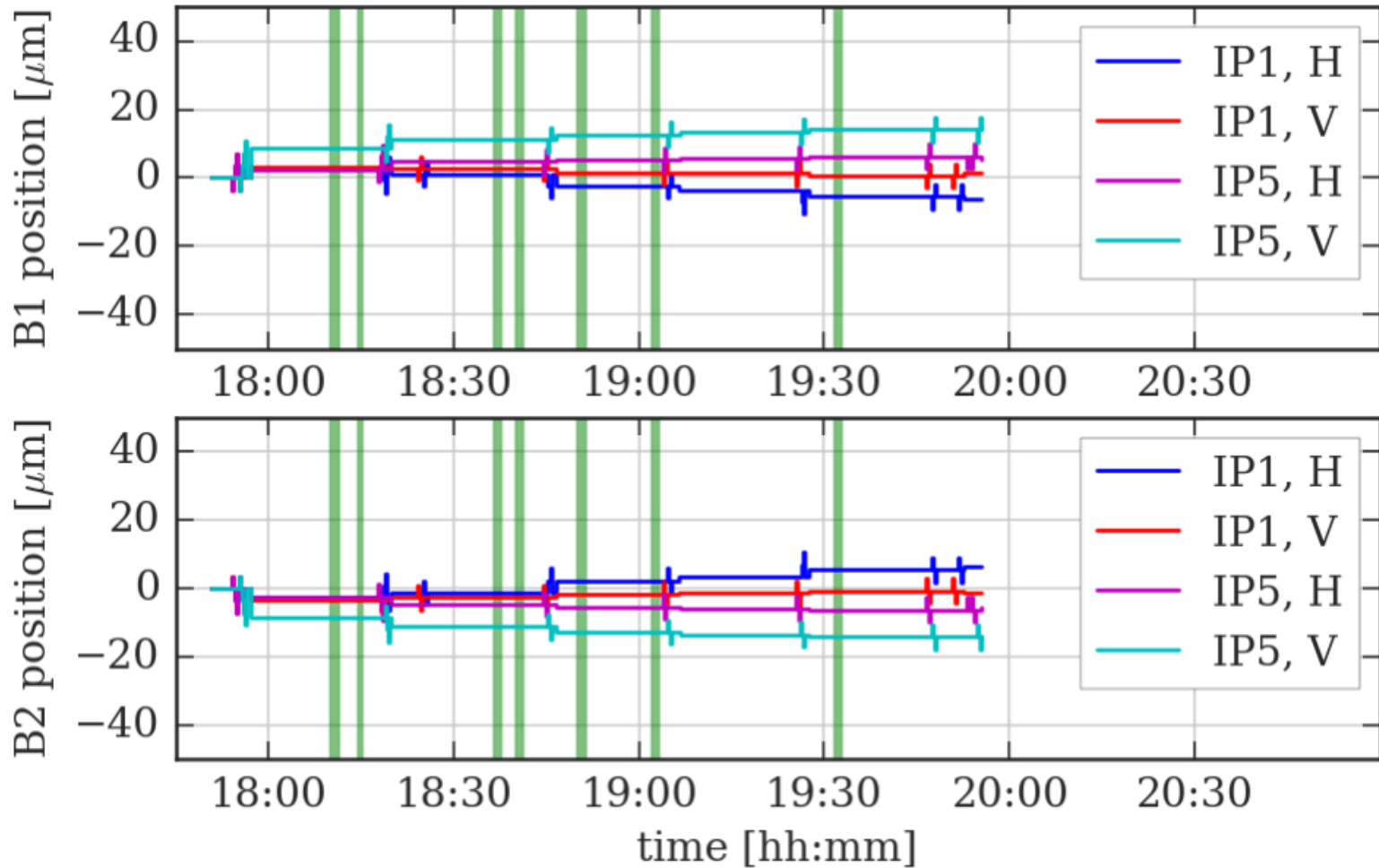




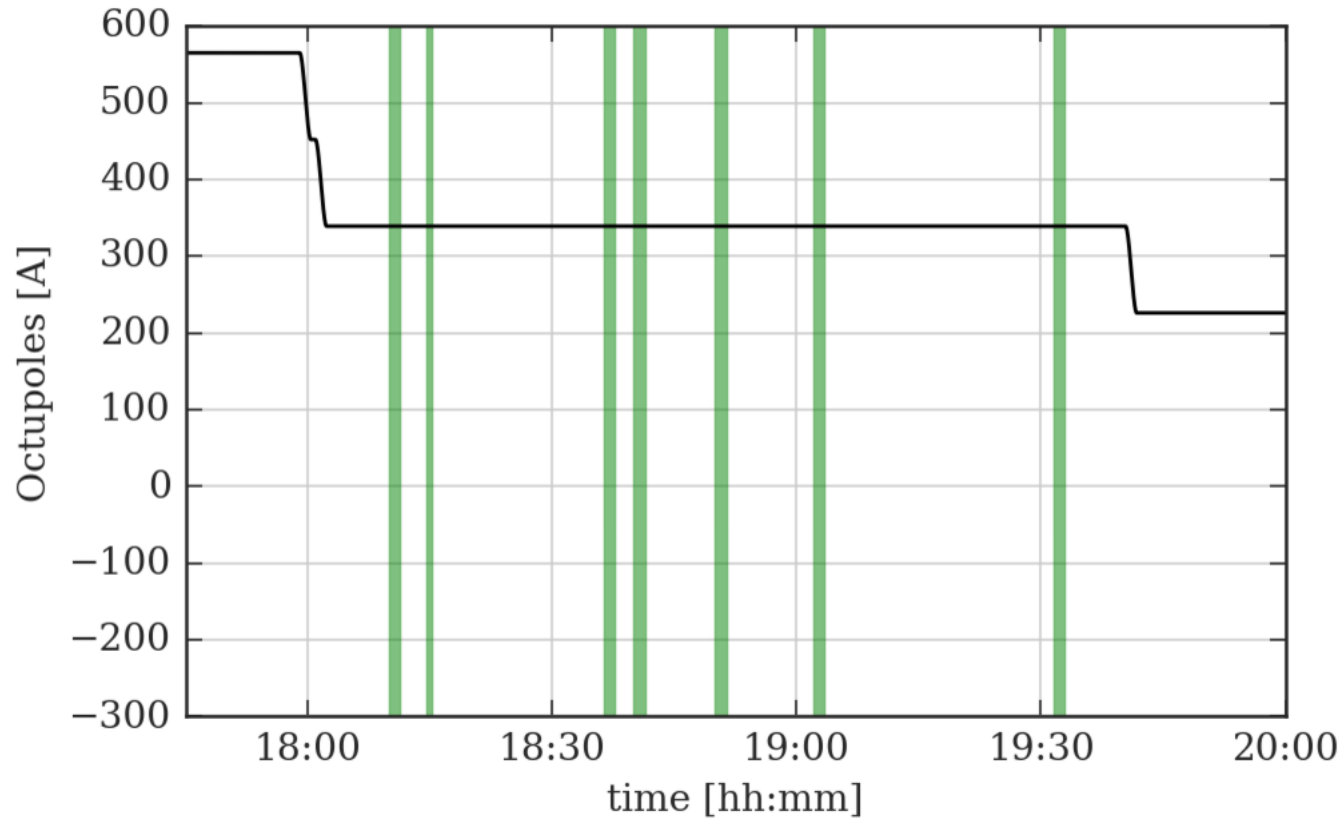
# Chromaticity trims



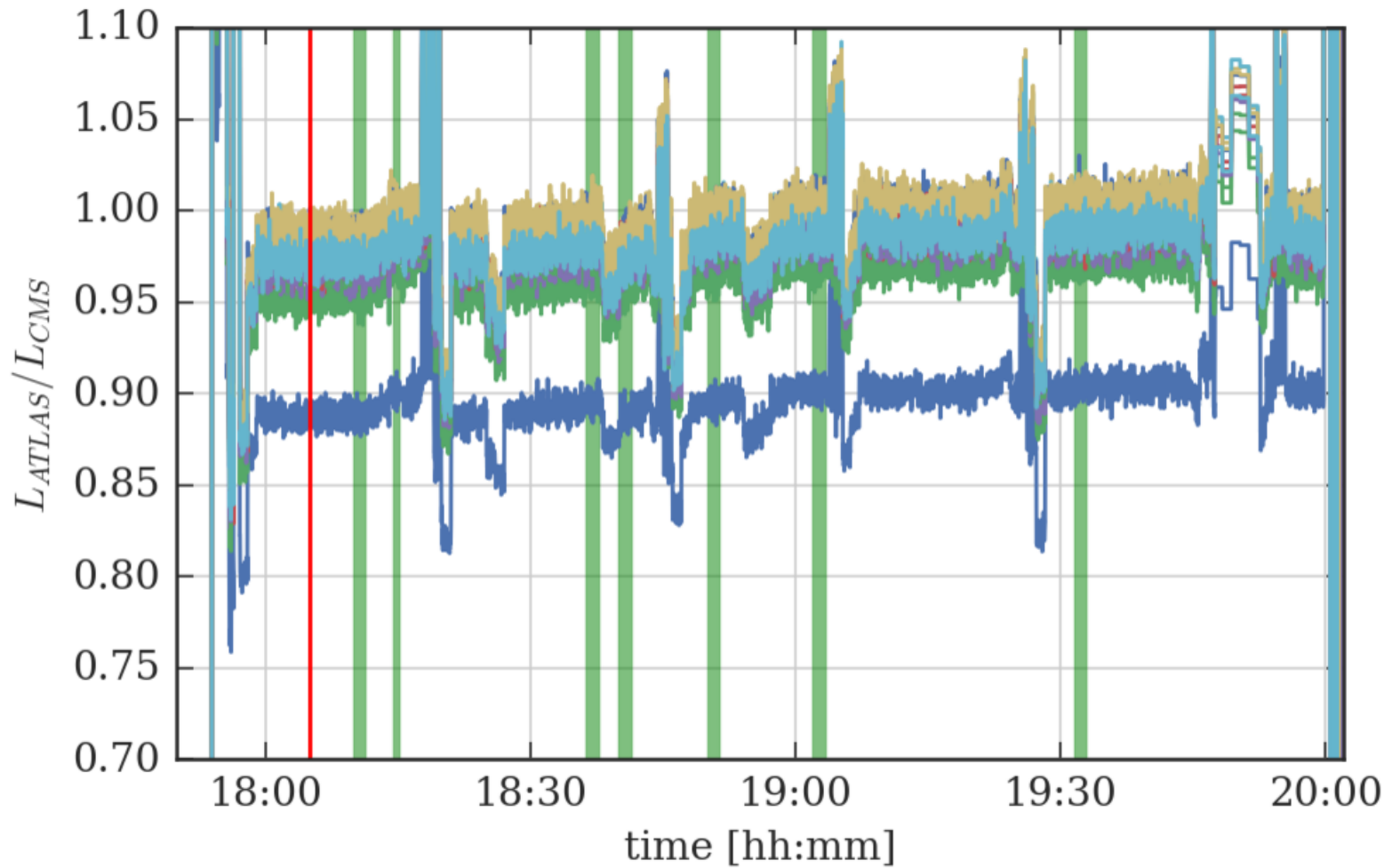
# Lumi scans



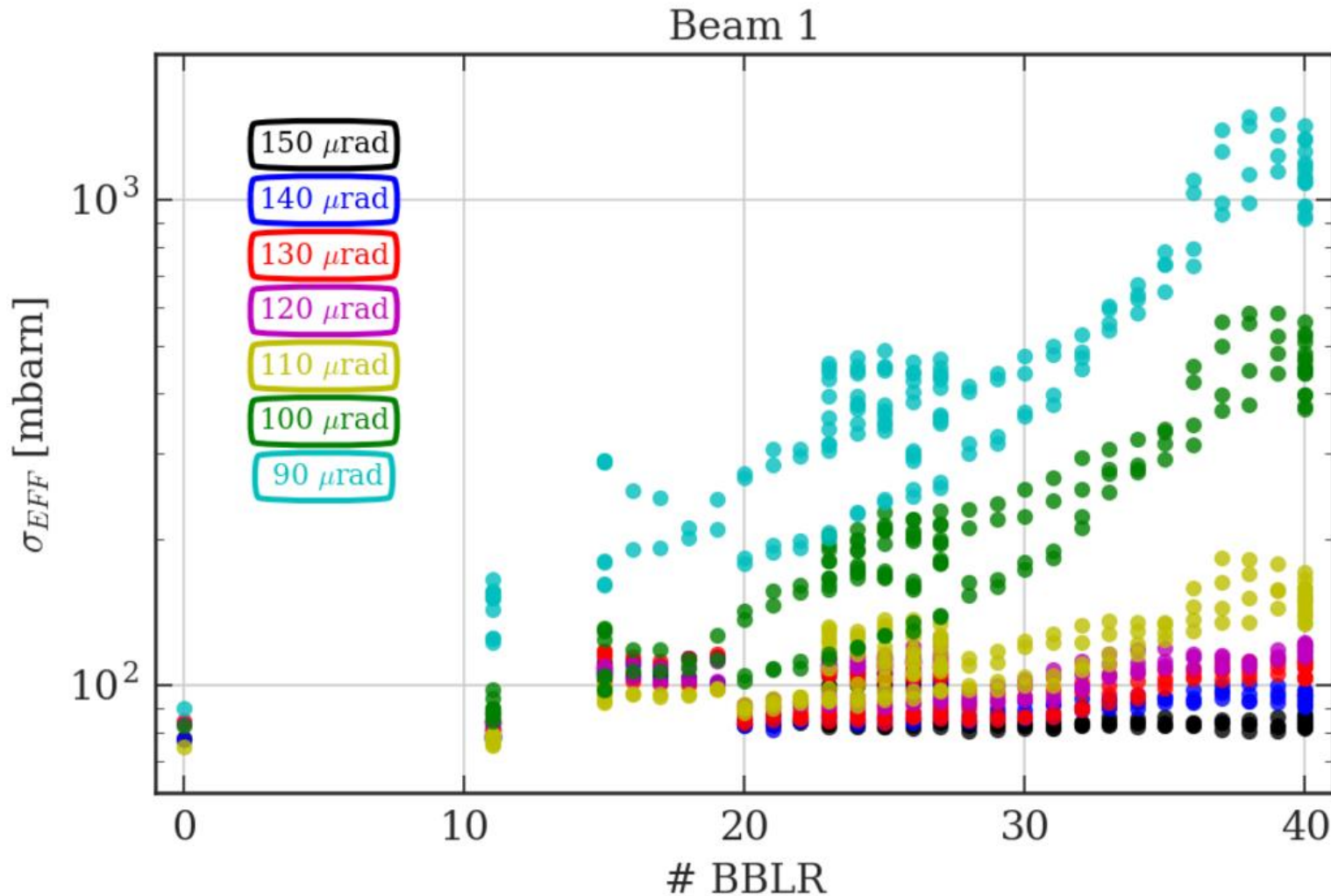
# Octupoles



# Luminosity ratio (I)

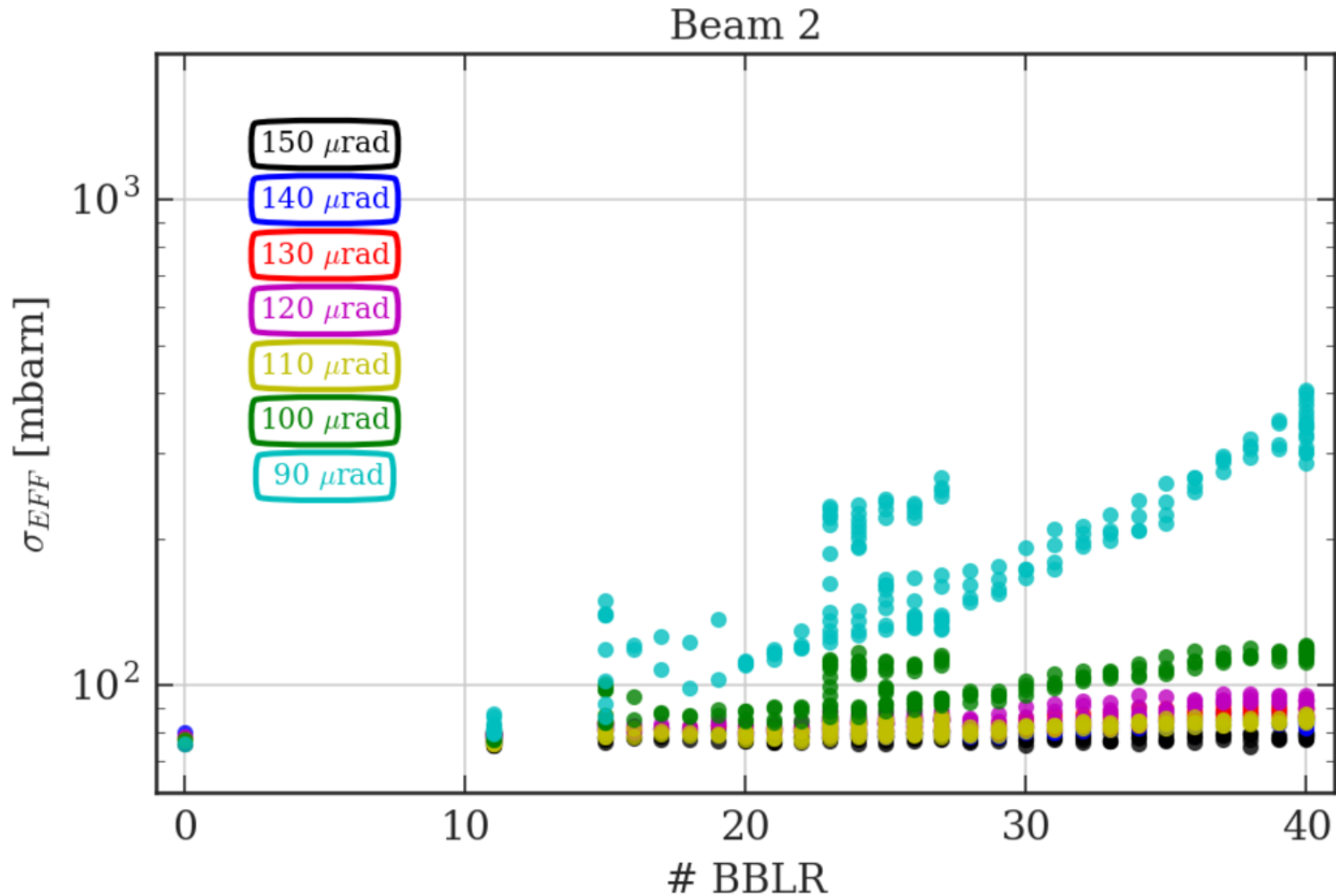


# Summary plot on B1



- 8b4e behaves worse than BCMS for the same number of the BBLR (in absolute terms behaves better, since less BBLR).
- Bunches with the same number of BBLRs show differences...

# Summary plot on B2



- B2, as observed in the past, much more resilient to LRBB.

# Summary of the PRELIMINARY analysis

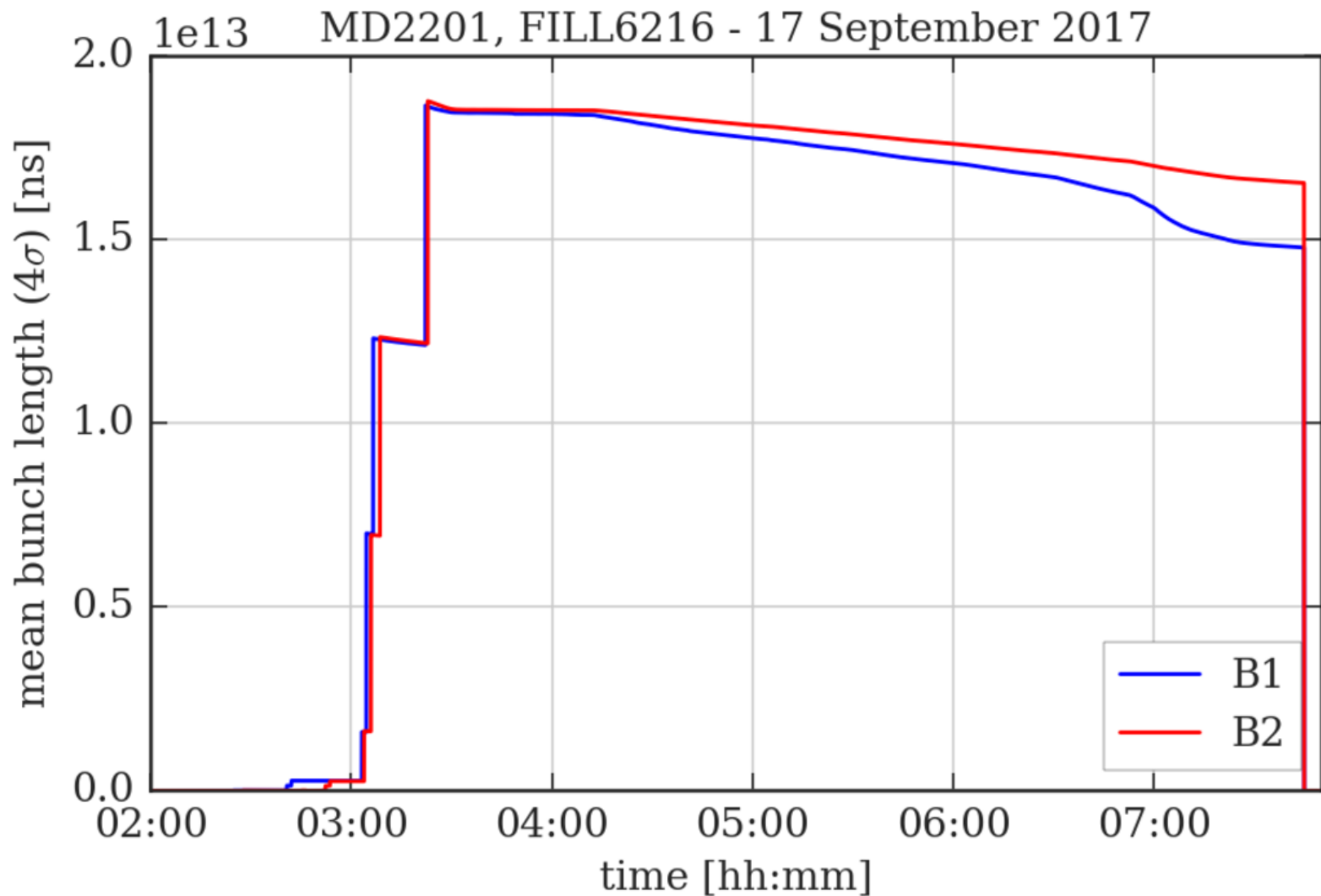
- MD2201 ran smoothly.
- The collection of data confirms and completes the past observations.
- Further analysis on going with particular emphasis on the profiles evolution
  - Difference of the 8b4e and BCMS
  - Difference of lifetime for bunches with the same number of BBLR
- B1/2 difference still to be understood.

Thank you for your attention.

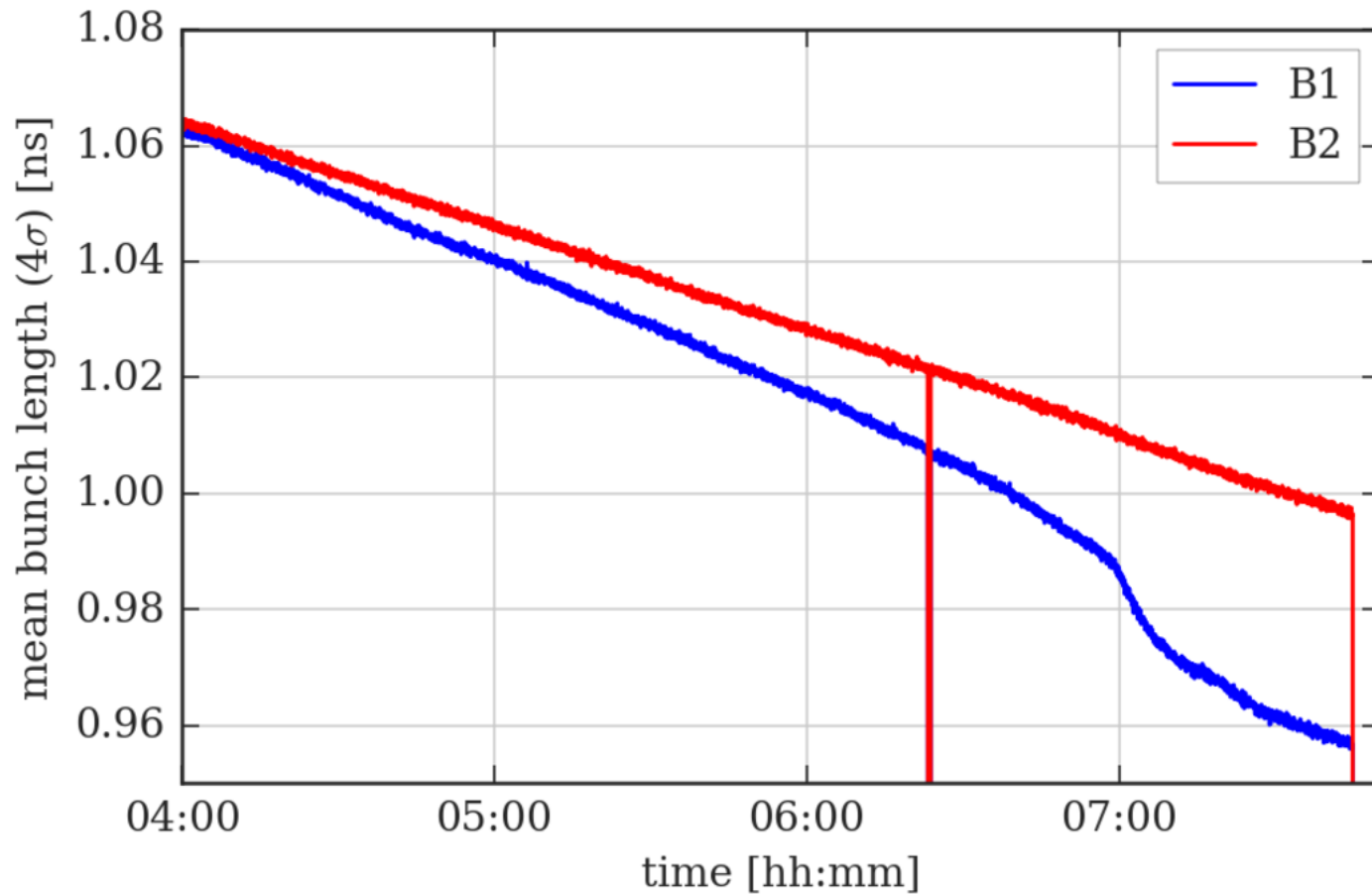
# BACK-UP slides



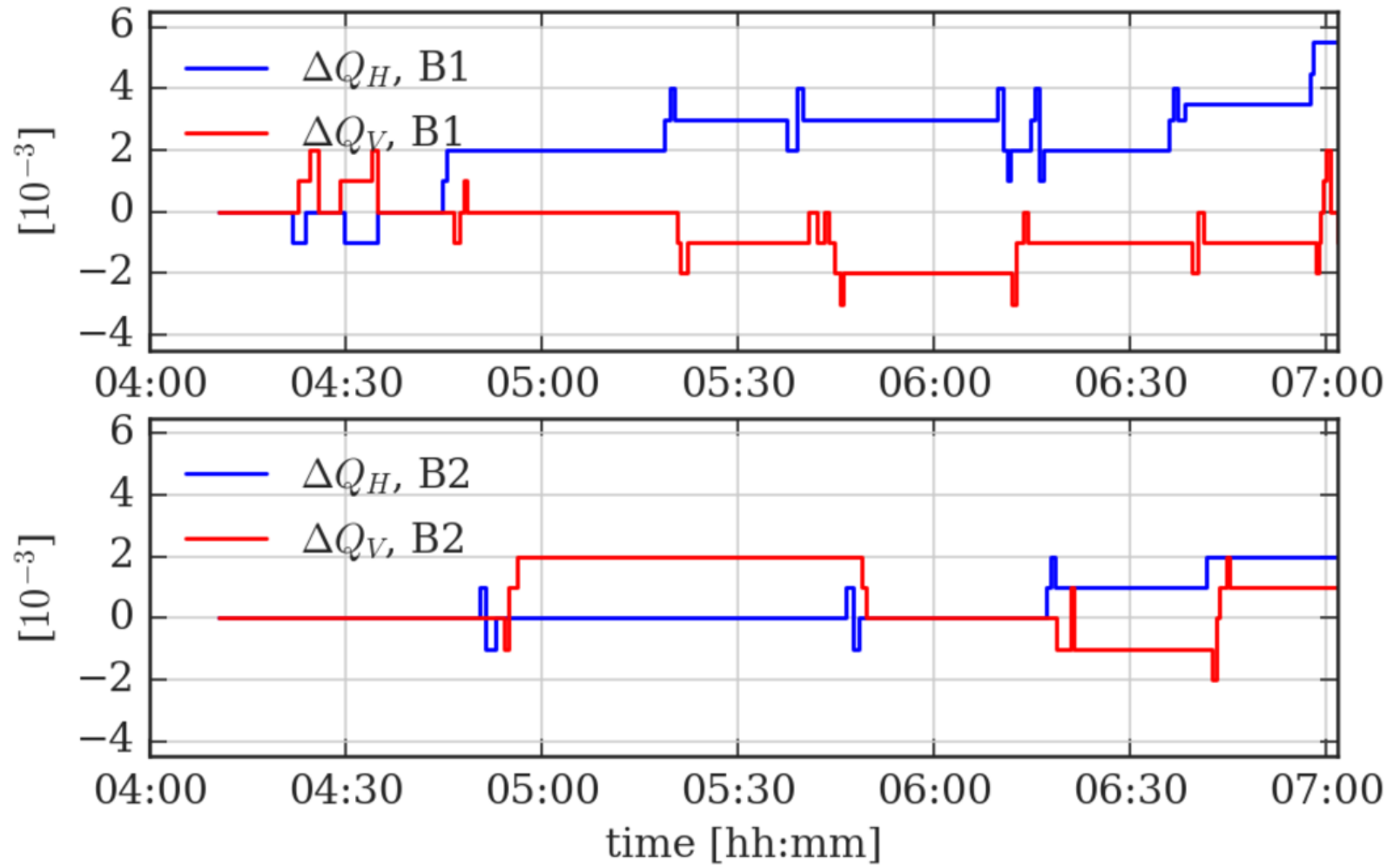
# Intensity evolution



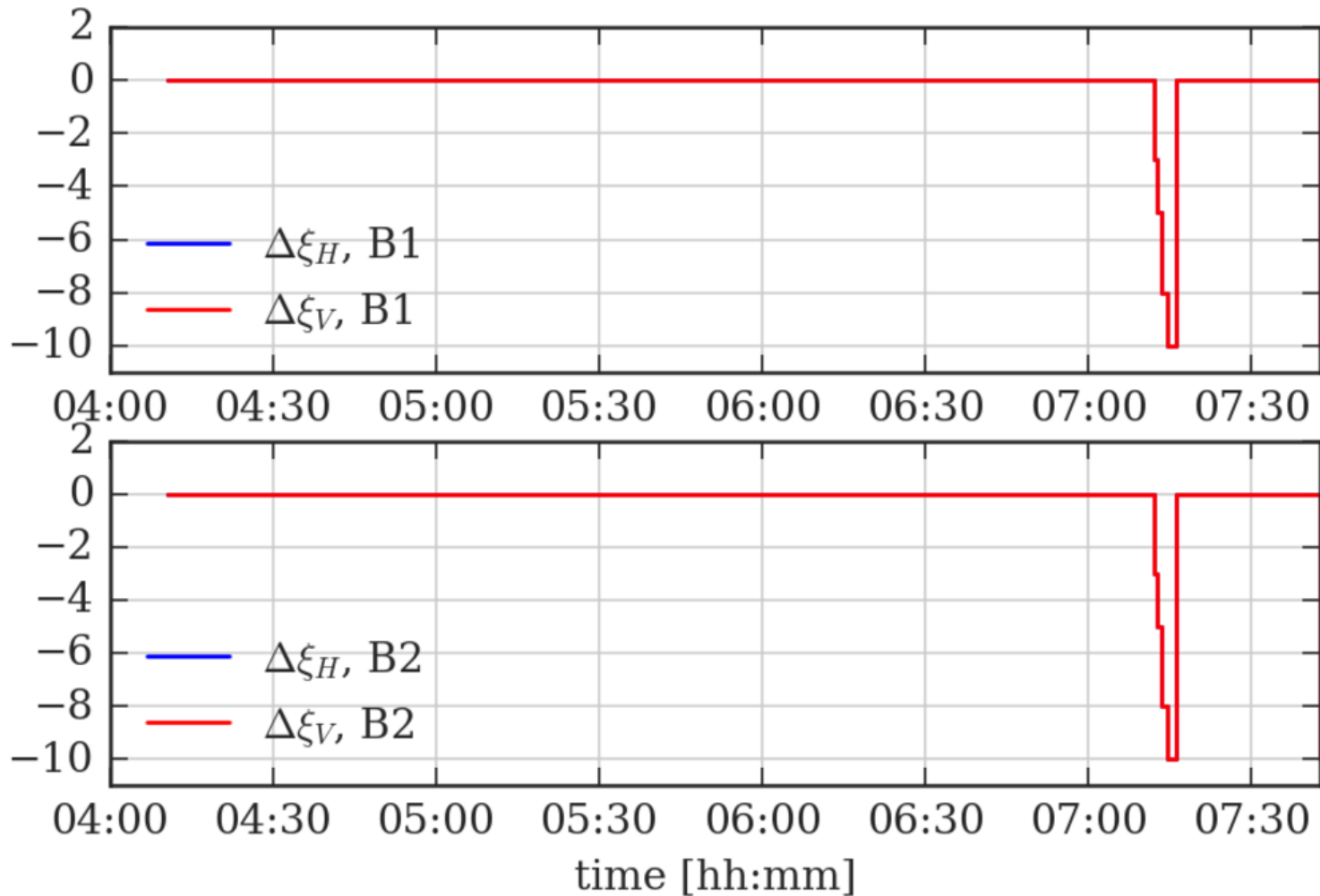
# Mean bunch length



# Tune trims



# Chromaticity trims



# Position scans

