



Crystal Collimation Quench Test 2024

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On behalf of BE-ABP-NDC

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rMPP Meeting on 2024 Ion MDs

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2024 Collimation Quench Test

- Ultimate performance limitation for heavy ions with crystals unknown
- Tangible estimate of quench limit helps machine interlocks optimization
- Aim to probe levels of **60kW & 100kW** in LHC design loss scenario (steady state loss rate **over 10s**)
- Could aim for fast loss scenario if limitations observed in run
- Last QT (2015) in B2H plane: **aim for B1H plane here**
- 6.8 Z TeV beams at flat top (lower quench limit than 2015)

2024 Collimation Quench Test

- Roughly 2×10^{10} charges per bunch
- Standard injection: 56 bunches
- Roughly 1.25 MJ per 56 bunches
- Proposal: per quench attempt 2×56 bunches – enough margin for 10s
- Two quench attempts per fill: $2 \times (2 \times 56)$ + some individuals for tests
- 12h: up to three fills for contingency
- Increase in target loss rate (Fill 1: 60kW → Fill 2+3 : 100kW)

2024 Collimation Quench Test

Collimator Settings

- Nominal collimator settings used & validated with higher intensities

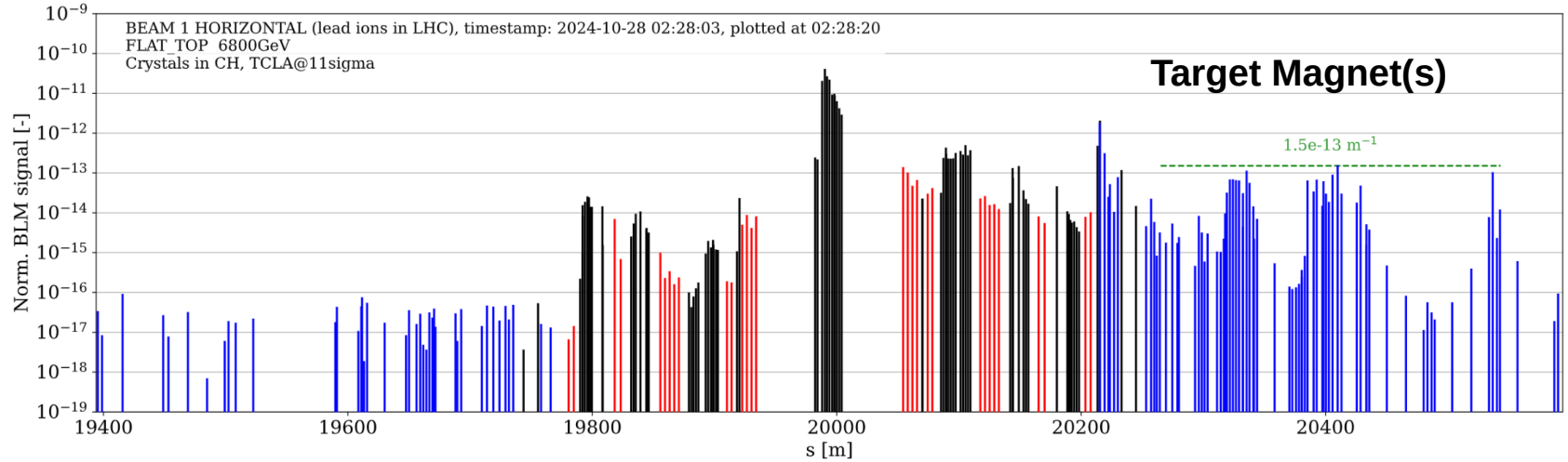
BLM Thresholds

- No new families: increase permitted loss rate compared to operational settings → less work for BLM team

ADT Settings

- Controlled by ADT expert with application successfully used in 2022

2024 Collimation Quench Test



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MB.B9R7.B1

MB.A11R7.B1

MB.B11R7.B1

No non-conformities identified

