



MD13303: Characterization of B1V crystal collimator

R. Cai, R. Bruce, D. Mirarchi, S. Redaelli, G. Ricci, A. Vella

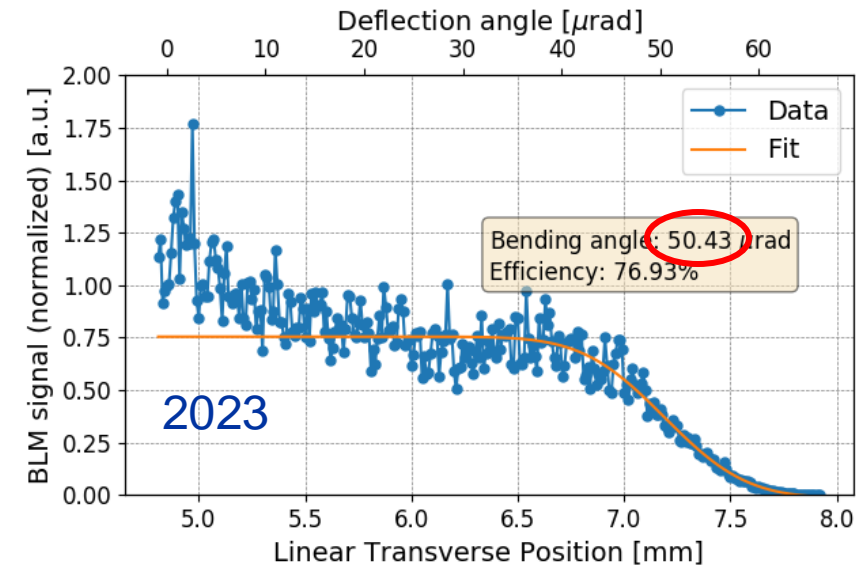
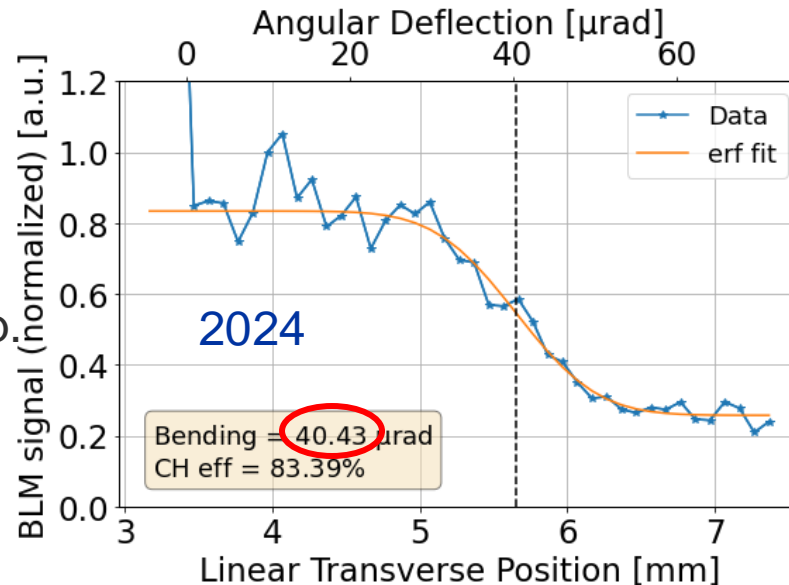
3rd of September 2024 – LHC Studies Working Group – MD4/5 Preparation

Motivation

- Crystal collimation is in the baseline of the 2024 ion run.
- Ensuring that **crystal conformity** to the specifications is crucial for the success of the collimation system.
- In a previous [short crystal characterization](#), a **potential decrease in bending angle of the B1V crystal was spotted**.
- **Crystals not yet checked at flat-top energy for the 2024 ion run.**

- **Goal:**

- Re-measure the crystals at injection for clearer analysis data.
- Measure the crystals at flat-top.
- Acquire loss maps if time allows.

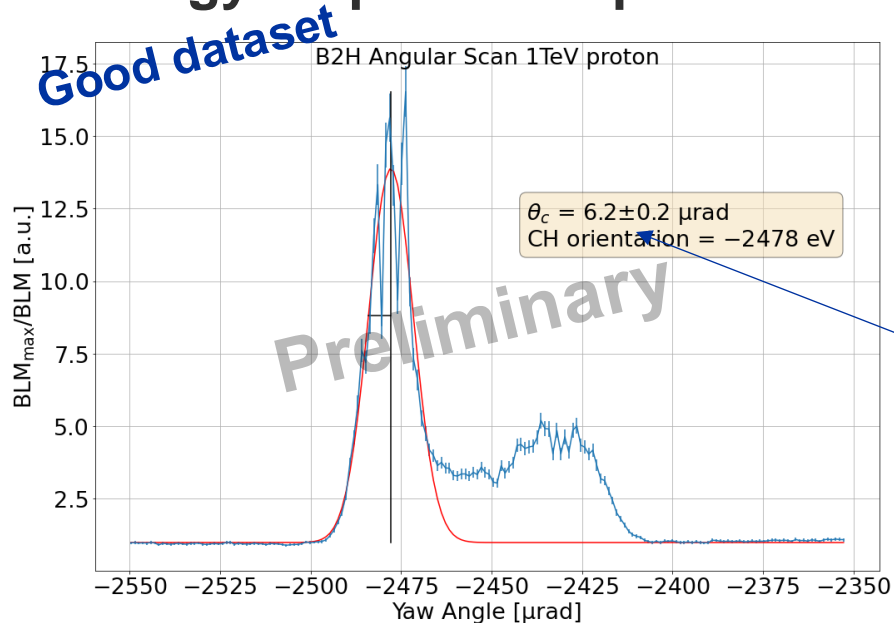


Beam requirements and plan

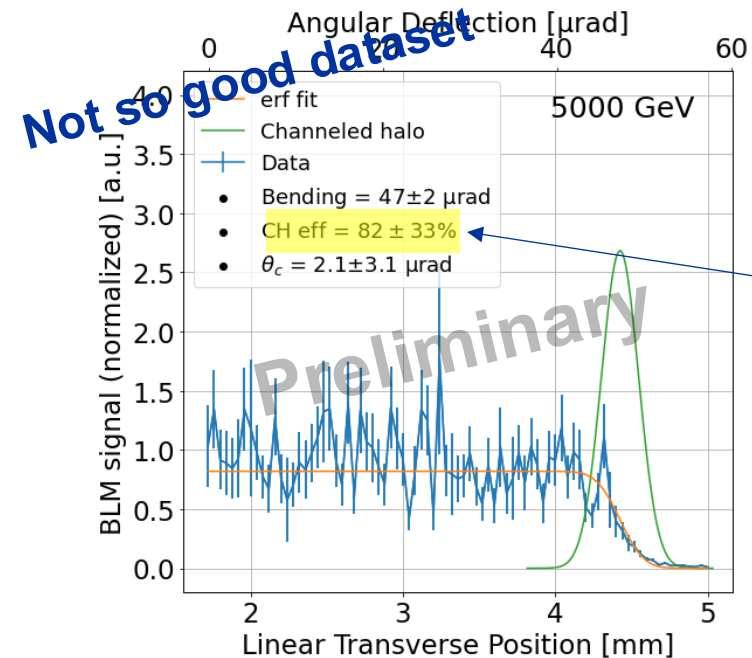
- **Up to 30 pilot bunches for both beams**, respecting the setup beam flag.
- **Plan:**
 - Find channeling orientation for all crystals.
 - Perform angular and linear scan at injection while using ADT to excite 3 bunches at the same time.
 - Ramp to 6.8 TeV.
 - Find channeling orientation for all crystals.
 - Perform angular and linear scan at flat-top while using ADT to excite 3 bunches at the same time.
 - Acquire loss maps if time allows.
- **Similar procedure to previous MDs ([MD10503](#)).**
- **Estimated duration: 6h**

Update on crystal measurements during ramp in steps

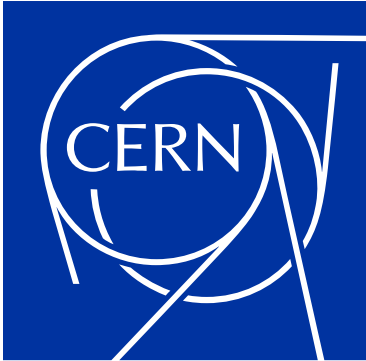
- During MD10343 the B2H crystal was measured at different energy steps.
- Data quality not consistent at every energy step.
- We renew the request the MD of performing crystal measurements in intermediate energy steps to complete the study.



Measured critical angle within 5% from theoretical value



Very noisy
→ high uncertainty



home.cern