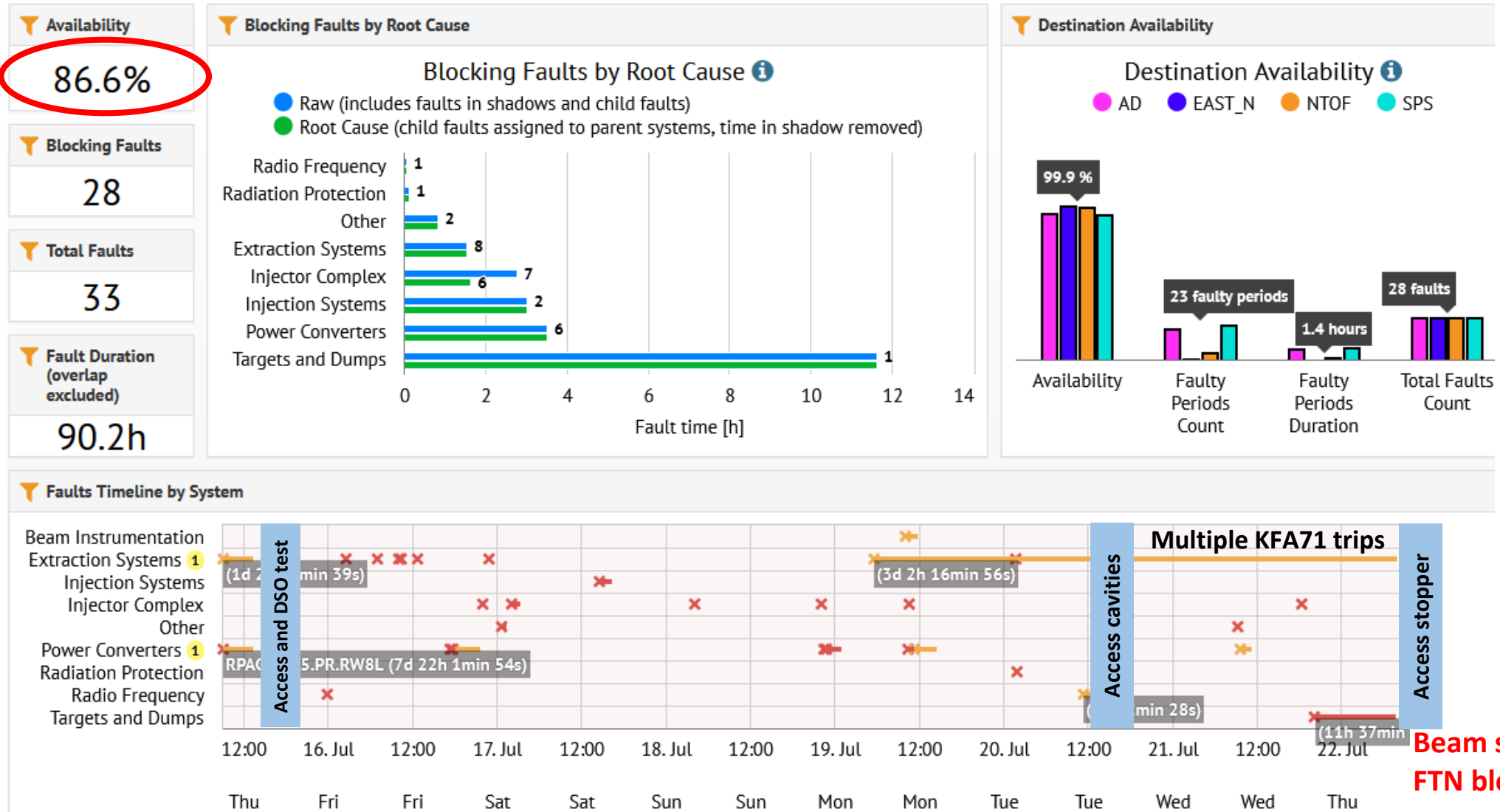


# PS Report W28-29



Many thanks to: Fernando, Marc, Patrick, Mike, Antoine, Thierry, Pieter, Alvaro, Didier, Thibaut, Denis, Frank, Raul, Vincent, Fabrice, Abdel, Oliver, Stephane, Jeroen, James, Yves, Fulvio, Quentin, Gilles, Jean-Marc, Todor, Carlo, Heiko, Alexander, Alexandre, Matthew, Ana, Olivier, Dominique, Anthony, Hannes, Ben, Bettina, Klaus, Gil, Benoit, Ewen, Gerd, Tom, Anti, Guillaume, ...

# Accelerator Fault Tracking (AFT)



## Beam stops

- Need to replace gap relay of the C10-36 (currently running without spare) **and C10-76**
  - Put in place the plexiglass protection box on the W8L
  - Few additional minor interventions could be done in parallel
- Done, planned intervention with no beam on Tuesday (20/07), 14h00-16h30
- Beam stopper FTN.STP428 blocked on Wednesday (21/07) evening
  - No beam for nTOF for one night
- Intervention in shadow of SPS stop on Thursday (22/07) with no beam 8h00 to 10h00
- Pneumatic valve was blocked
- IGBT in modulator of Linac4, **no beam until ~11h30**

# Activities of last week

- **Optimisation of operational beams**

- Loss reduction by  $\sim 50\%$  on AD beam by optimising working point at extraction, and improving longitudinal settings for transition crossing and batch compression
  - ✦ Transmission through FTA worse compared to 2018, being followed up with AD team
- Nominal TOF bunch length achieved by adjusting rotation at extraction, beam loss reduced by optimising working point at extraction
- AWAKE single bunch available at  $30 \times 10^{10}$  p and already taken by the SPS

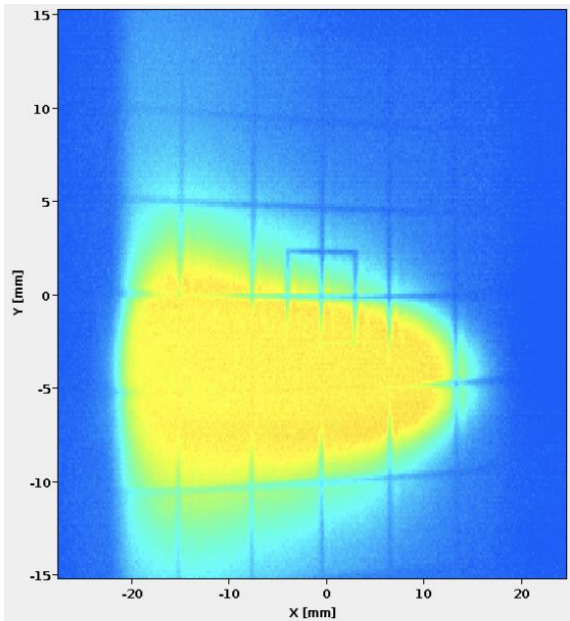
- **TOF DSO tests on Thursday 15/07 and Friday 16/07**

- Tests couldn't be completed immediately on Thursday morning (objects left in the area, cabling issue with beam imminent warning)
- Issues resolved during the day on Friday  $\rightarrow$  beam permit signed
- W8L repair and access in the shadow of the DSO tests
  - ✦ Electronic card (crowbar control) found to be damaged inside the W8L converter
  - ✦ Presence of dust might be a reason for the failure  $\rightarrow$  cleaning campaign of the converters in this room to be envisaged
  - ✦ Repair of C66 amplifier, SEH23 calibration, bumper and septum in SS61

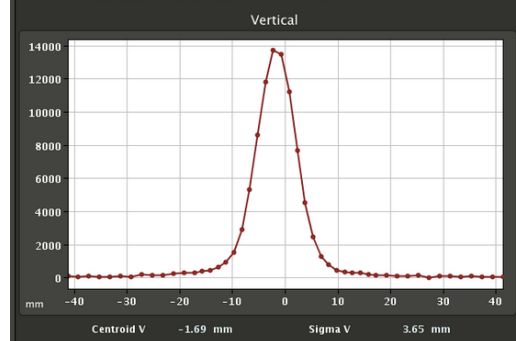
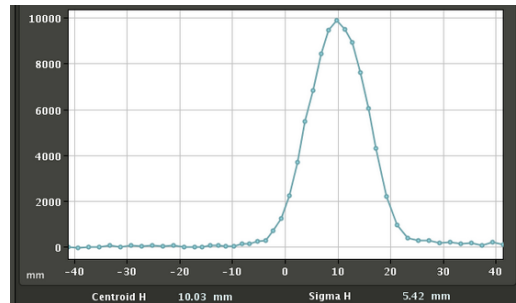


# Beam to nTOF

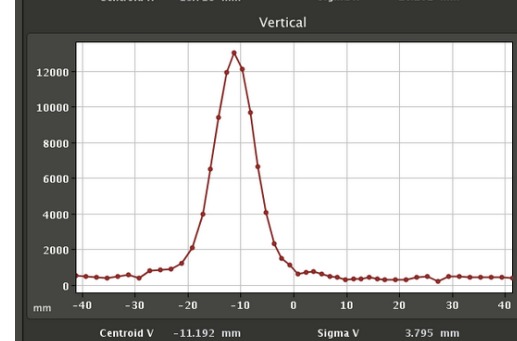
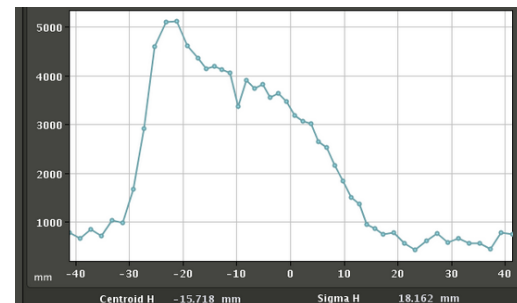
- **First beam sent to the new nTOF target on Monday 10am**
  - First shots didn't reach target due to wrong settings on FTN quadrupoles → settings generation to be put in place
  - New SEM grids upstream the target worked immediately
  - Intensity of  $200 \times 10^{10}$  ppb to be used during the early commissioning phase
- **Intensity increased to almost nominal ( $700 \times 10^{10}$  ppb) with fewer cycles**
  - Quadrupole scans to optimize beam size on target
  - Compromise between transverse size and losses to be discussed



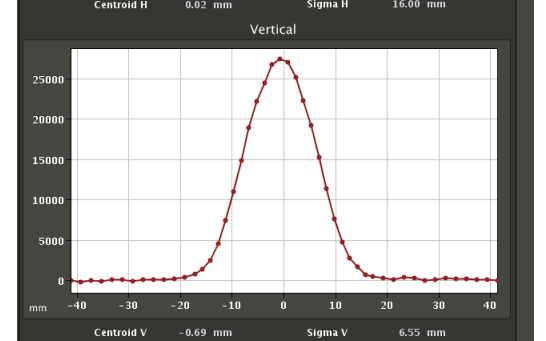
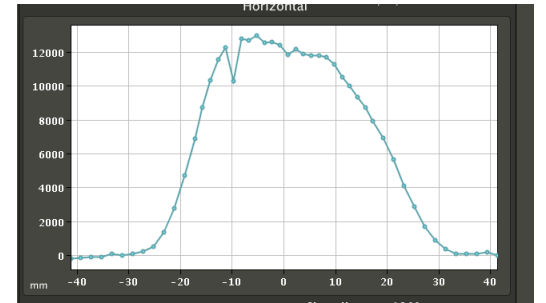
Without bunch rotation  
at  $200 \times 10^{10}$  ppb



With bunch rotation  
at  $200 \times 10^{10}$  ppb



With bunch rotation  
at  $750 \times 10^{10}$  ppb



# Summary of operational beams

Fixed target beams	Status	Comment
SFTPRO (core only)	Operational	Delivered to SPS at $\sim 6..7 \cdot 10^{11}$ p/p
SFTPRO (5 turn extraction)	Operational	<b>2 - 5 · 10<sup>12</sup> ppp</b> delivered to SPS, <b>up to 1.5 · 10<sup>13</sup> ppp</b>
AD	Operational	<b>1.4 · 10<sup>13</sup> p</b>
TOF	Operational	<b>8 · 10<sup>12</sup> ppb</b>
EAST	Setup	Basic setup, dedicated studies ongoing to improve extraction control
LHC-type beams	Status	Comment
LHCPROBE, LHCINDIV	Operational	
LHC25 (72b)	Operational	Polished up to $1.3 \cdot 10^{11}$ ppb <b>setup at <math>2 \cdot 10^{11}</math> ppb</b> $e_h$ (C2595 flat-top) $\approx$ <b>2.1 mm mrad</b> $e_v$ (C2595 flat-top) $\approx$ <b>1.8 mm mrad</b>
LHC25 (12b or 24b)	Temporary	3 BP cycle delivered to SPS
LHC25 BCMS (48b)	Operational	Polished up to $1.3 \cdot 10^{11}$ ppb
AWAKE	Operational	<b>3 · 10<sup>11</sup> ppb</b> , adjusted extraction bump compensation

# Questions and Comments

## PS Supervisor of the week 29 – **Heiko Damerau**



**8:45** Daily Zoom meeting during beam commissioning

Web address: <https://cern.zoom.us/j/9372114100?pwd=L29BcmIhUENCdFBRStYtXYVcrM1B4Zz09>

Meeting ID : 937 211 4100

Passcode: 525463