Status of the 2023 NA62 Run

JACOPO PINZINO

INFN PISA

28/07/2021

Resume of 2022 run

- Full intensity (2022) = 580 MHz in GTK (effective spill length 4s)
- 2022 +45% intensity vs 2018
- 80% DAQ efficiency at full intensity in 2022

Period	T4	T10	NA62	Trigger
2022	0.753	0.906	0.844	0.856
2022 ($>10/08$)	0.775	0.924	0.877	0.904
2022 ($<10/08$)	0.726	0.883	0.800	0.795
2021	0.710	0.871	0.800	0.731

T4: (# spills with beam on T4) / (# expected spills)
T10: (# spills with beam on T4 and T10) / (# spills with beam on T4)
NA62: (# spills written on disk) / (# spills with beam on T4 and T10)
Trigger: (# events written on disk) / (< # events > that should have been written given the intensity)

2023 Run

Run conditions

- Better focusing on T10 than in 2022
  - Proper realignment of P42, major issue with a vacuum chamber found and temporary fixed

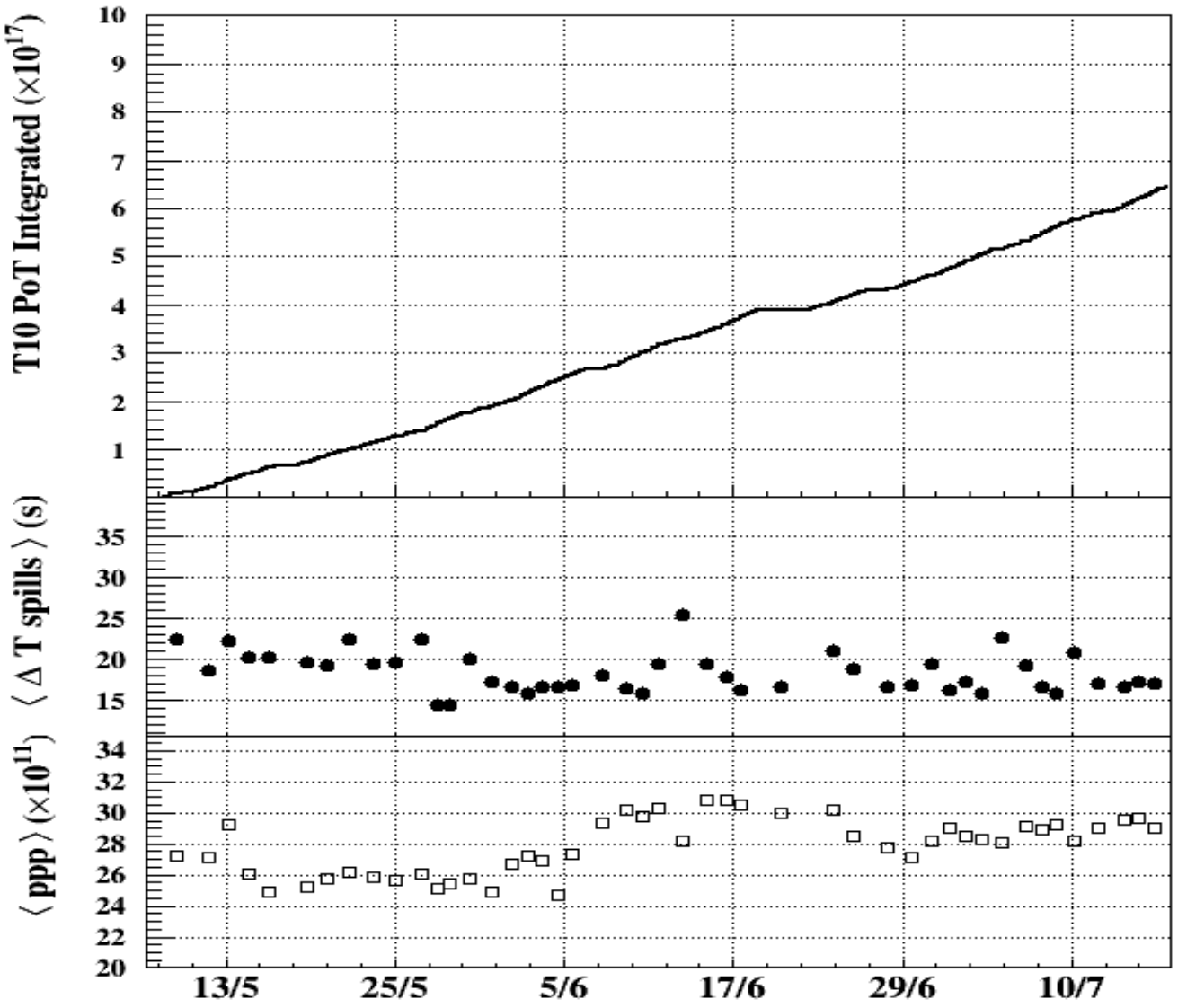
- Link between T10 reading vs intensity compared to 2022
  - Argonium suggests this year >10% more intensity / PoT than 2022
  - Out-of-time rate in GTK suggests 5%, but uncertainty not negligible
  - Probably we can state that the intensity in 2023 is + (10 ± 5)% per PoT wrt 2022

- Smooth data taking at $29 - 30 \times 10^{11}$ on T10 → ~610 MHz in GTK

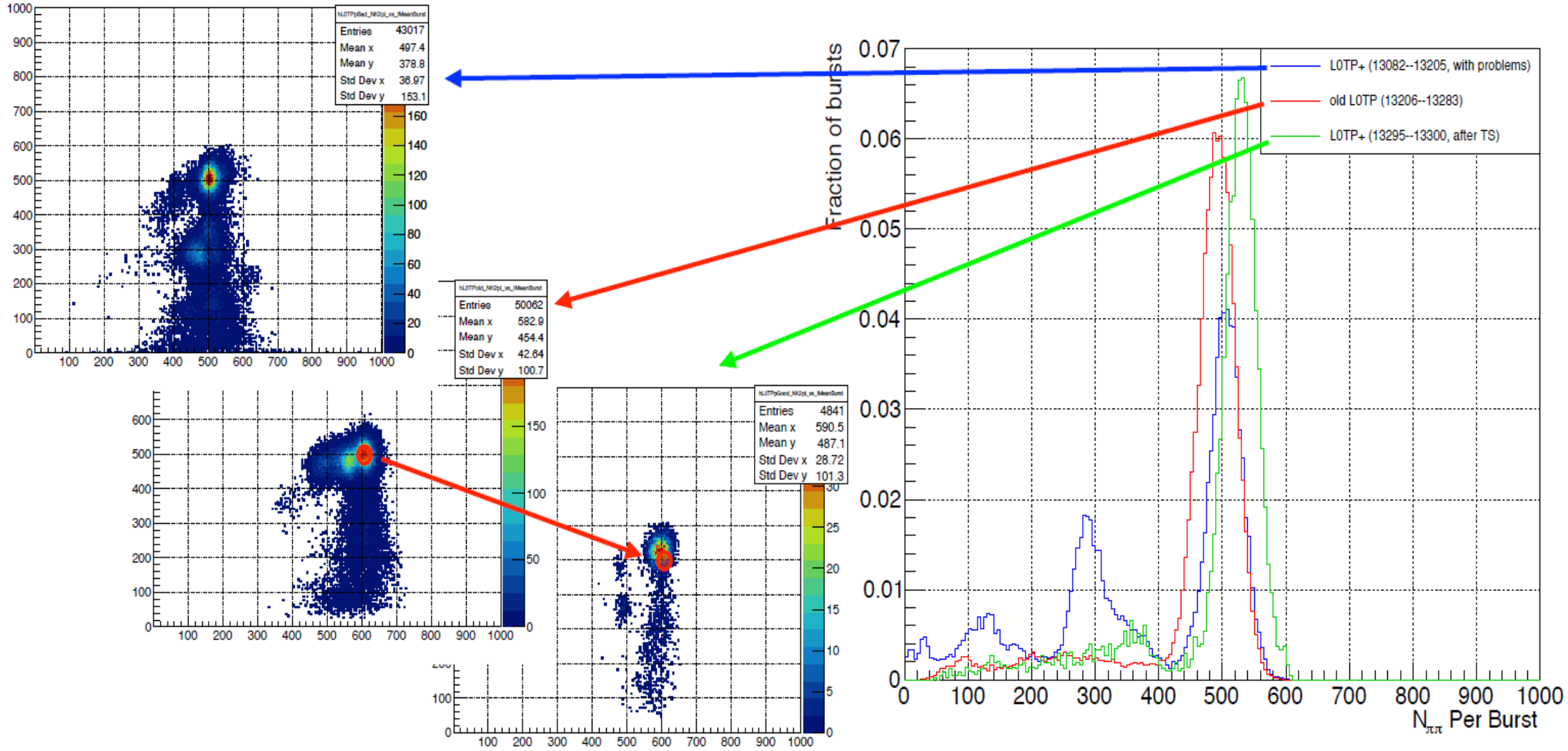
L0TP+

- Implemented for data taking since day 1
- Some issues in the first period of the data taking related with intensity: problem understood and fixed

2023 Run


T10 PoT Integrated (×10^17)
10
9
8
7
6
5
4
3
2
1
⟨ Δ T spills ⟩ (s)
35
30
25
20
15
⟨ ppp ⟩ (×10^11)
34
32
30
28
26
24
22
20
13/5
25/5
5/6
17/6
29/6
10/7

L0TP+



Gain ~5% with L0TP+ with slightly lower intensity (~2%) but still higher N($K^+ \to \pi^+\pi^0$) with L0TP+.