



CHANTI STATUS

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NA62 ITALIA

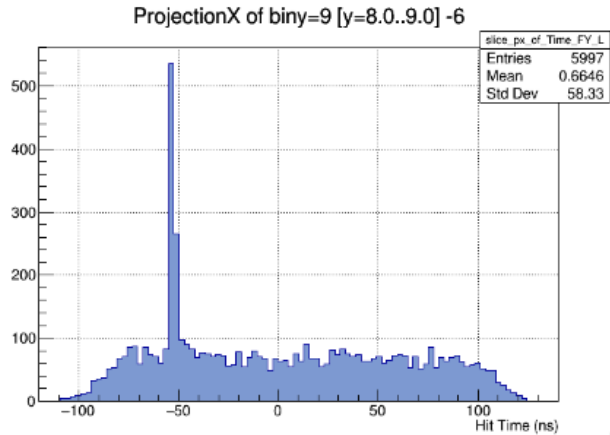
07/11/2024



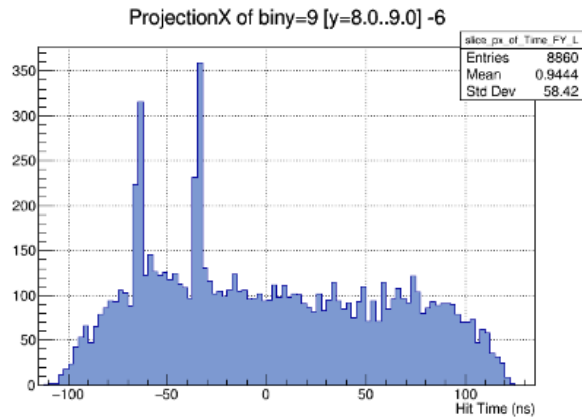
UNIVERSITÀ DEGLI STUDI DI NAPOLI
FEDERICO II



FIRMWARE ISSUE RECAP



Good Channel

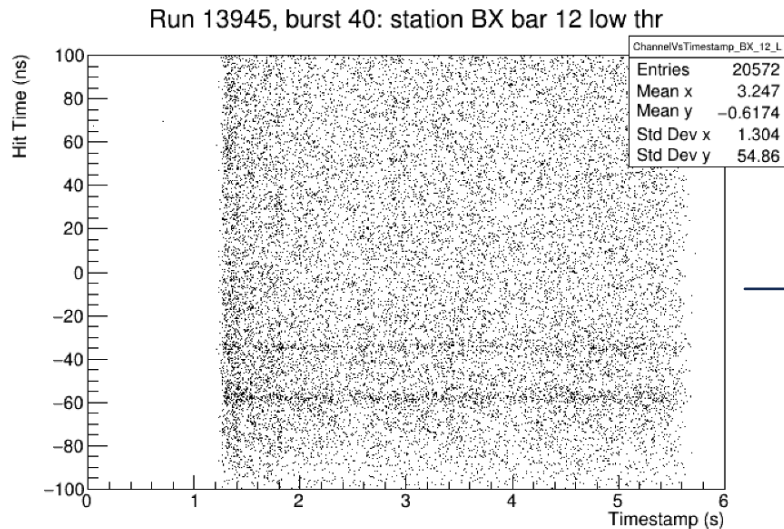


"Two peak" channel

Twin peaks observed in TDC outputs within a single burst

Separation of ~25 ns

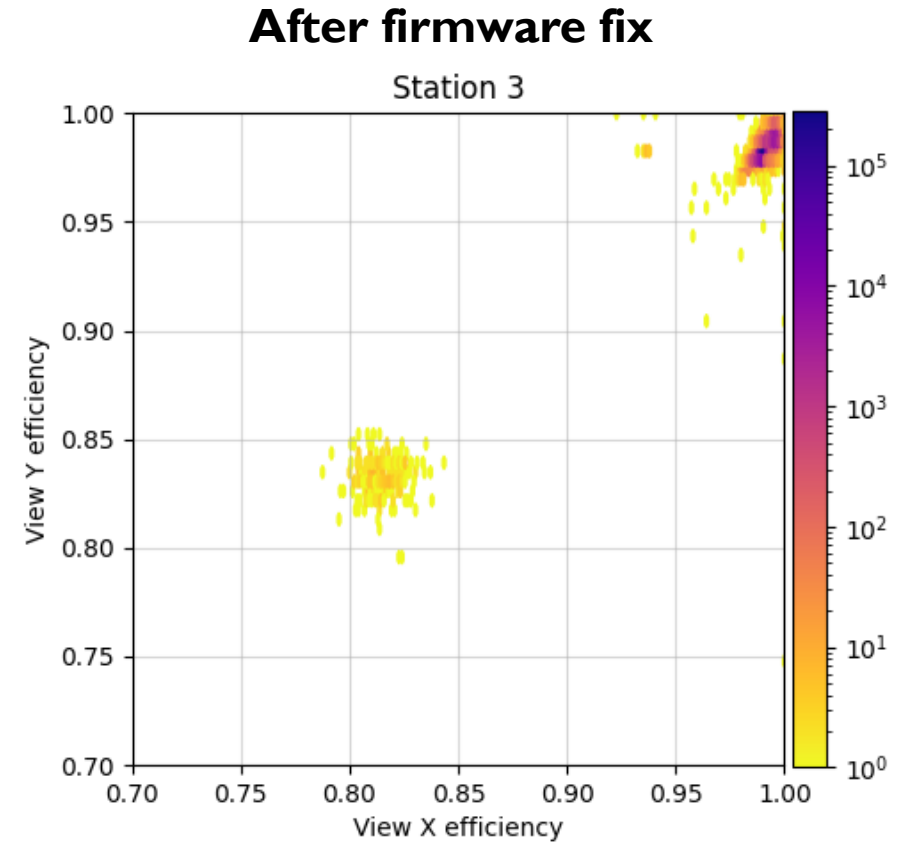
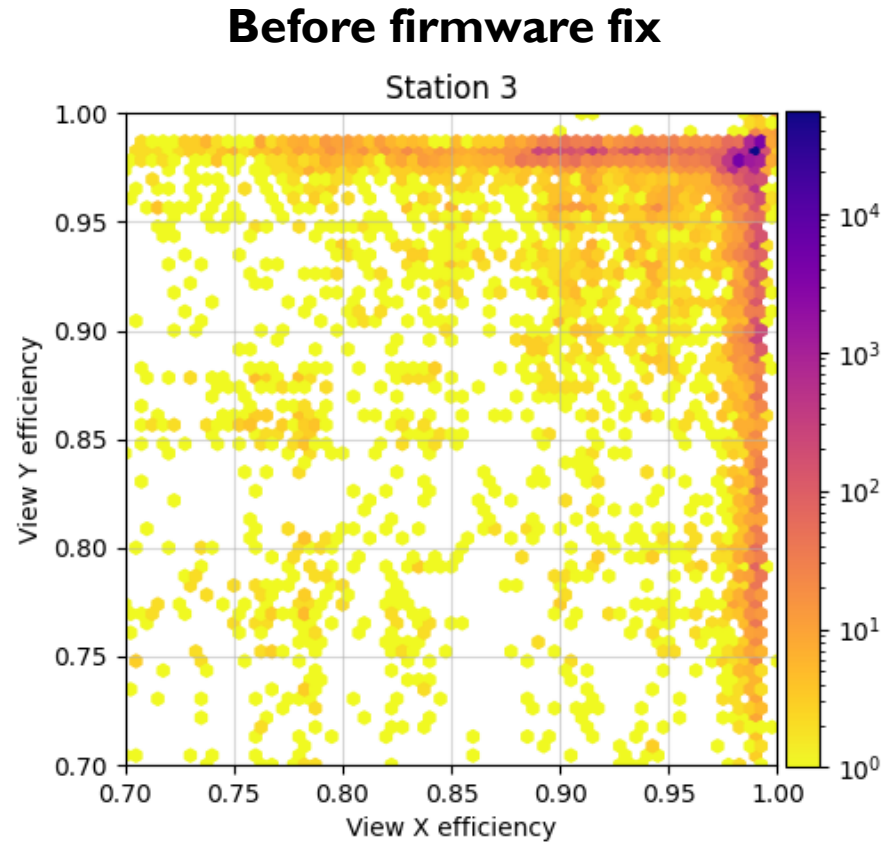
Observed also on VetoCounter TDCs



→ No structure within the burst to correct the second peak offline

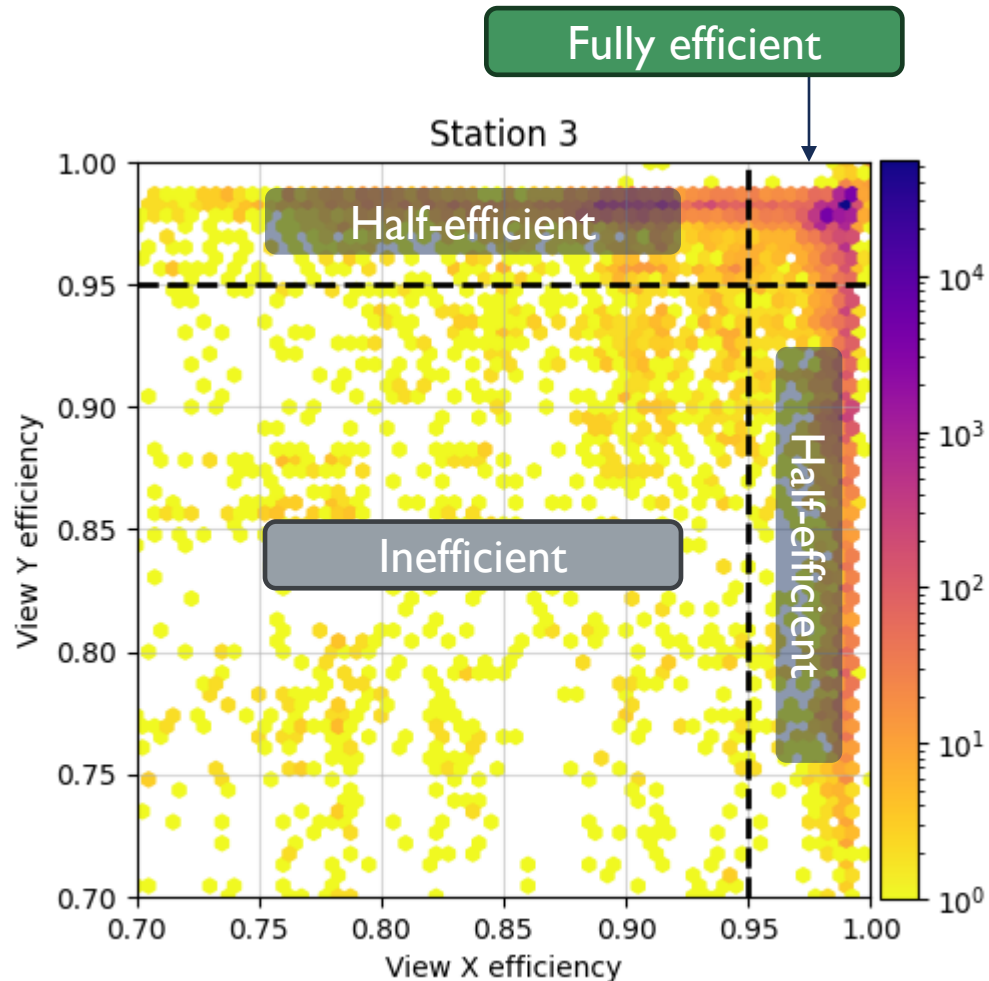
Issue solved since run 13991 (~end of 2024A)
~15% of the 2024 dataset was taken in this condition

EFFICIENCIES



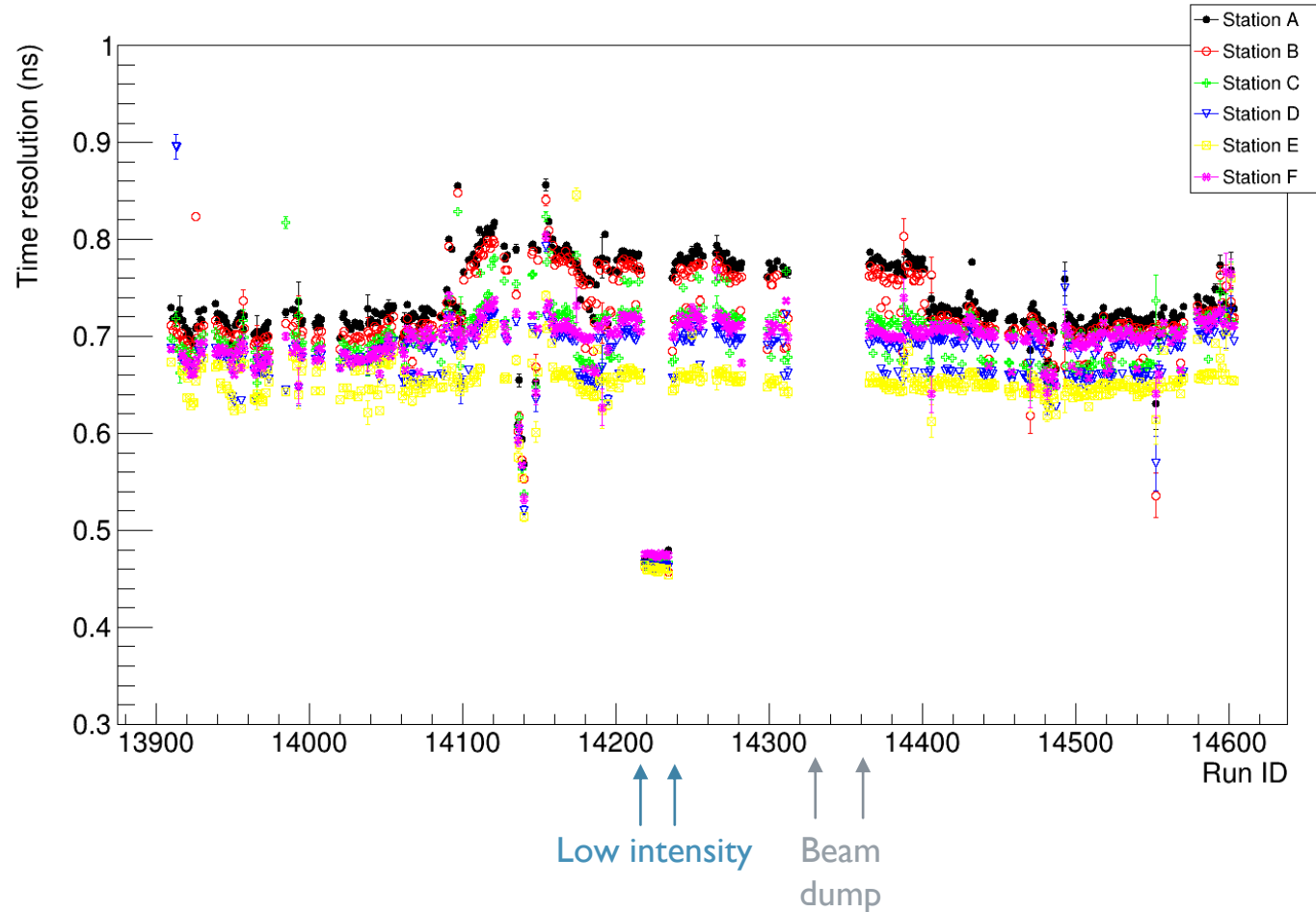
Other stations show similar behaviour

BAD BURST (RE)DEFINITION

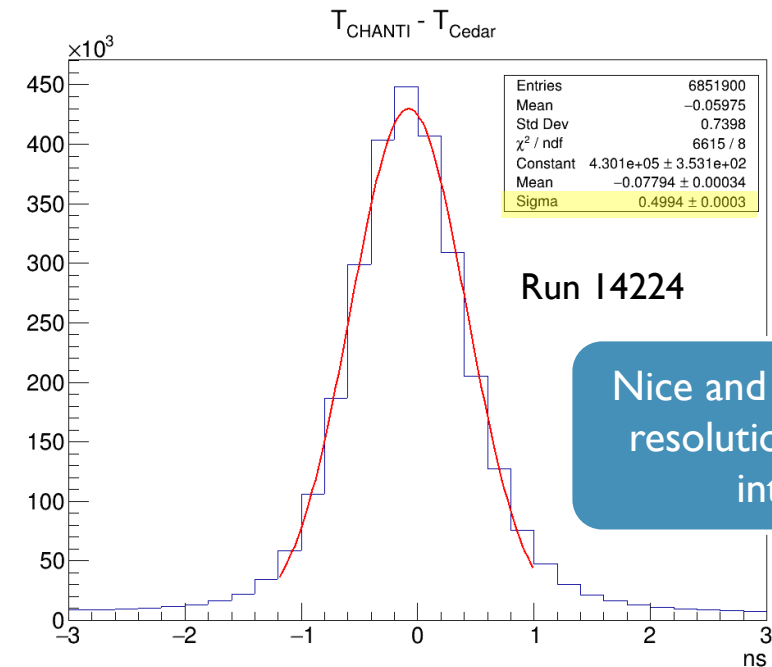


- **Previously**
 - Take only **fully efficient** bursts
 - Veto on XY coincidence
- **Proposed**
 - Recover **half-efficient** bursts
 - Veto on single view hit in half-efficient bursts (need dedicated veto tool, WVIP)
- **Expected recovery**
 - From 46% to 16% bad bursts in 2024A
 - <1% bad bursts in rest of 2024
 - Overall, expect ~2% bad bursts for 2024 after full implementation
- **Status**
 - Half-efficient bursts unmarked bad since v3.9.11
 - Implementation of veto tool in progress

TIME RESOLUTION

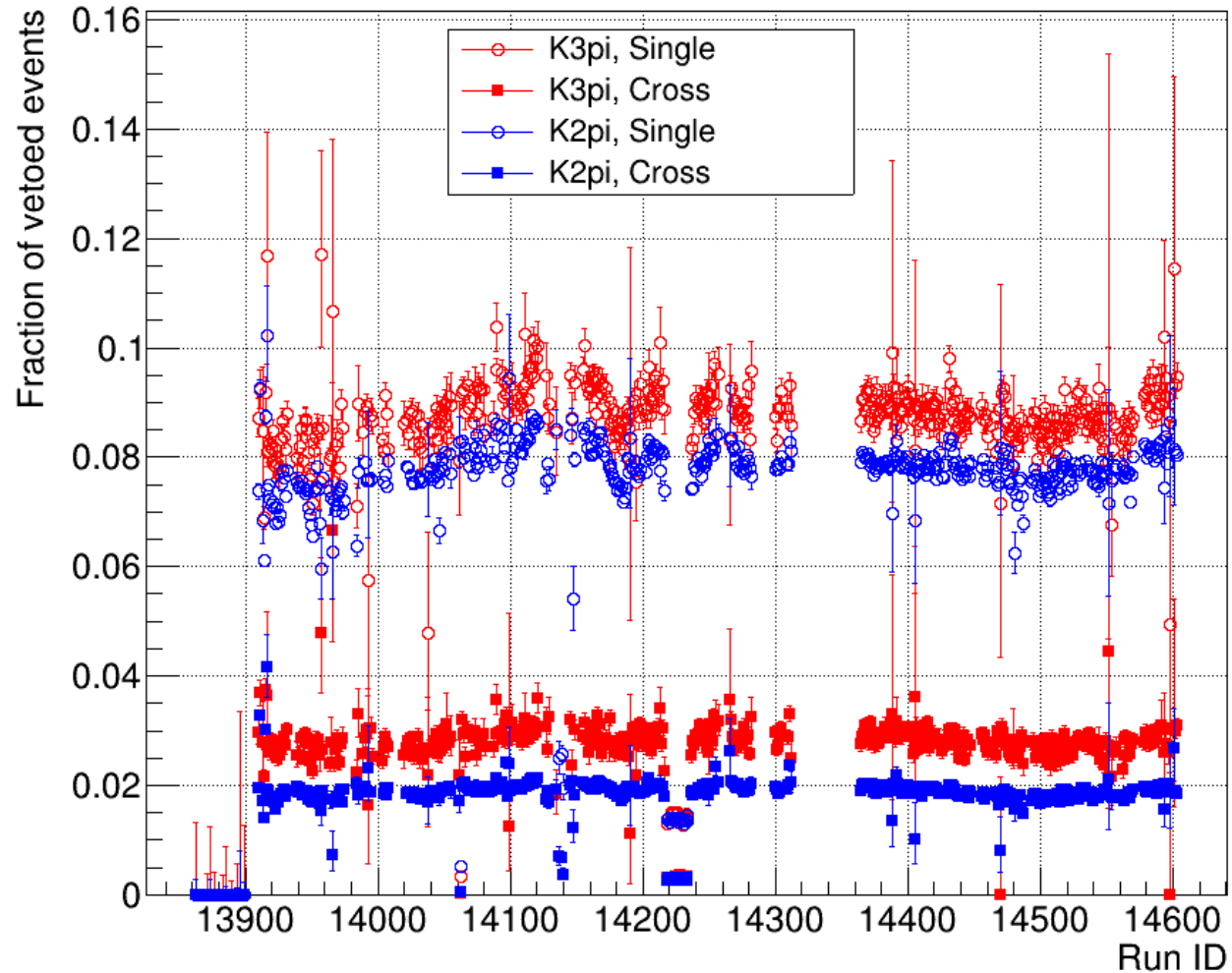


Overall stable, well below target of 1 ns
(veto in pnn analysis: ± 3 ns window)



Nice and clean ~ 500 ps
resolution during low
intensity!

RANDOM VETO



- Stable within the year
- Stable with respect to previous years
- RV during low intensity $\sim 0.3\%$ (with ± 3 ns window!)

HARDWARE STATUS

- SiPMs
 - Dark currents have increased by ~ 20 nA/day in 2024 (in line with 2022 and 2023), reaching $8\sim 10$ μ A at the end of the data taking
 - Ready to install new SiPMs in February 2025, which we will keep until the end of NA62
- Front-end boards
 - Two boards occasionally stuck in a state where it is impossible to communicate (either via DCS or via USB)
 - Problem is in CPU side: power supply is working as expected even in the 'stuck' state
 - Try to reproduce the problem during the YETS and possibly replace CPU / boards (three spares are available)
- Readout
 - Overall, the new TDC + FELIX system looks stable and reliable
 - Old 3 CHANTI TEL62 boards are now available as spares