

PC \Leftrightarrow PC Tests & PC/PULSAR Test Plans

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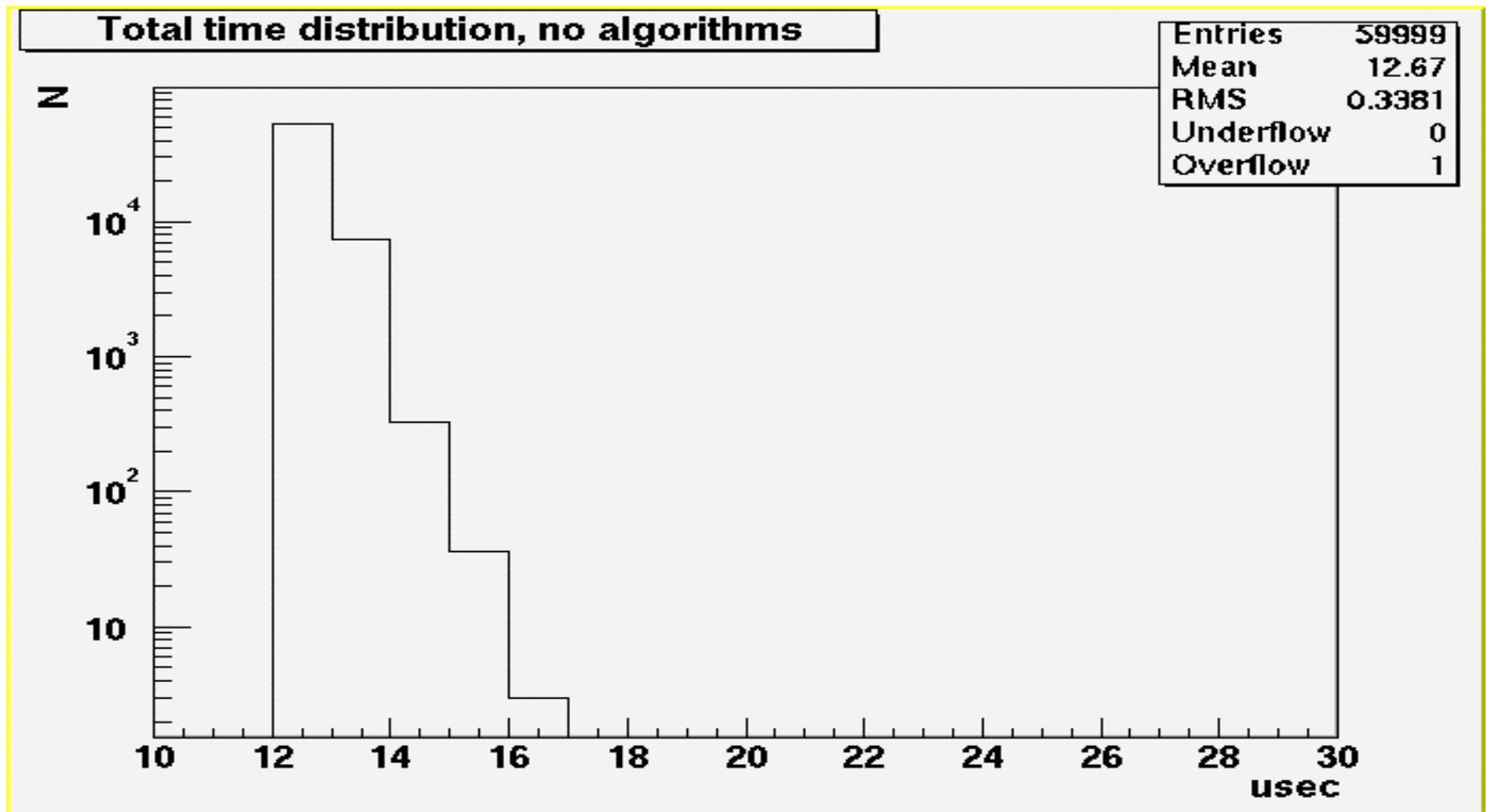
PC $\langle \Rightarrow \rangle$ PC Setup

- Started timer on sending PC, sent TL2D data in Cheng-Ju's v0.6 format to algorithm PC.
- Received data, ran algorithms, sent back decision bitmask.
- Received bitmask on sending PC, stopped timer.
- Difference between stop/start time is the PC $\langle \Rightarrow \rangle$ PC round trip time.

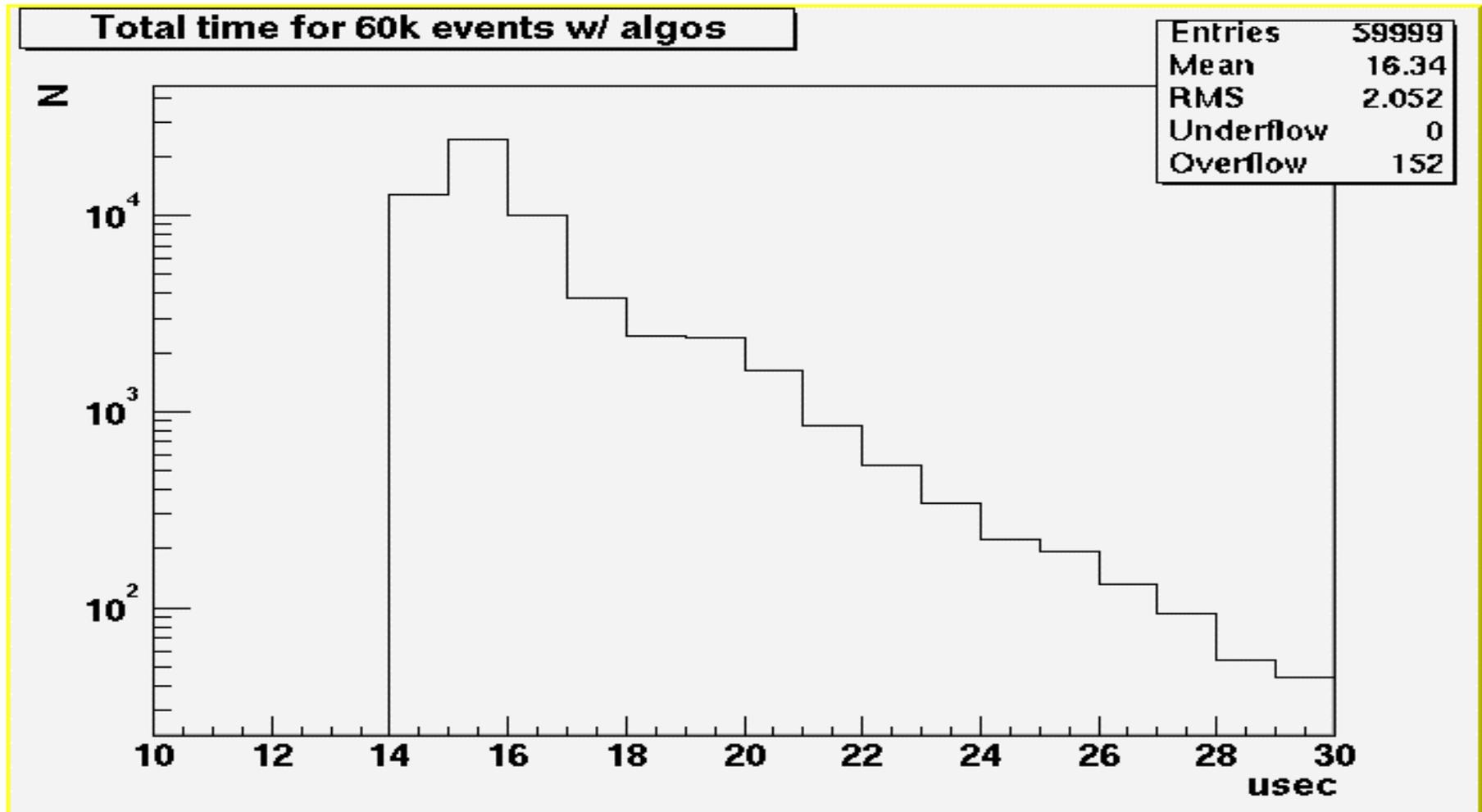
PC \Leftrightarrow PC results

- No bitmask discrepancy errors for all 60k events.
- Round trip times make sense.
- Distribution tails are algorithmic.
- FedEx killed pcpulsar2

PC \Leftrightarrow PC Round Trip Time for data/bitmask, no algorithms



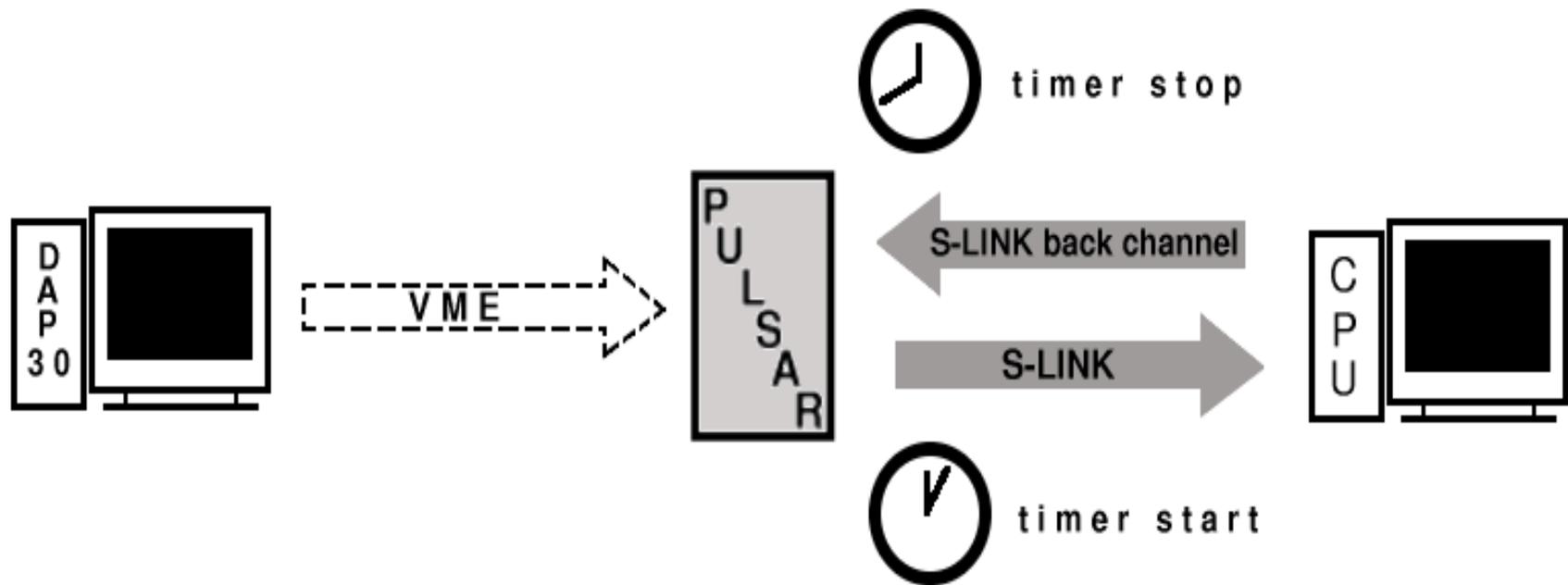
PC \Leftrightarrow PC Round trip time with algorithms



PC/PULSAR Test Motivations

- We've studied the algorithms and I/O with PCs ... ready for a more realistic test.
 - Will the PULSAR play nice with an S32PCI64 ?
 - Tests with a PULSAR will obviate the need for a second PC (and its operating system), which should reduce I/O latency.

PC/PULSAR Test Diagram



PC/PULSAR Test Goals

- **Send**

- Send a buffer of TL2D data (in Cheng-Ju's v0.6 format) from PULSAR to PC over S-LINK.

- **Algorithms**

- Run algorithms on PC and send 128-bit decision bitmask to PULSAR.

- **Receive**

- Receive bitmask on PULSAR and time the whole process.

Requirements for Send

- We will write software to load the data over VME.
 - First pass: wait until bitmask of the current has been received before sending another event.
 - We need a PULSAR address to write the data to.
- We need PULSAR firmware to send the event data from the PULSAR buffer via S-LINK to the PC.
- We would like the PULSAR to start an on-board timer or set a debug pin when the send starts.

Requirements for Algorithms

- Minor changes to our PC \Leftrightarrow PC code are needed for testing with a PULSAR.

Requirements for Receive

- We need PULSAR firmware to receive the decision bitmask over S-LINK.
- We need to inform VME that the bitmask has been received.
- We would like PULSAR to compare the received bitmask with the bitmask read in from VME.
- We would like PULSAR to stop an on-board counter, or set a debug pin, when the receive and comparison are complete.

Prioritized Wish-list

1. The allocation of a buffer for event data transfer (via VME) and the ability to send buffer contents over S-LINK.
2. The ability to receive the decision bitmask from the PC and to read it out with VME.
3. Start/Stop timing on pins.
4. On-board bitmask comparison and error readout.
5. Start/Stop timing with a counter, VME readout.

Conclusions

- Successful PC \Leftrightarrow PC tests.
- Ready to run with a PULSAR!