TPC online ⇒ offline calibration

November 2002

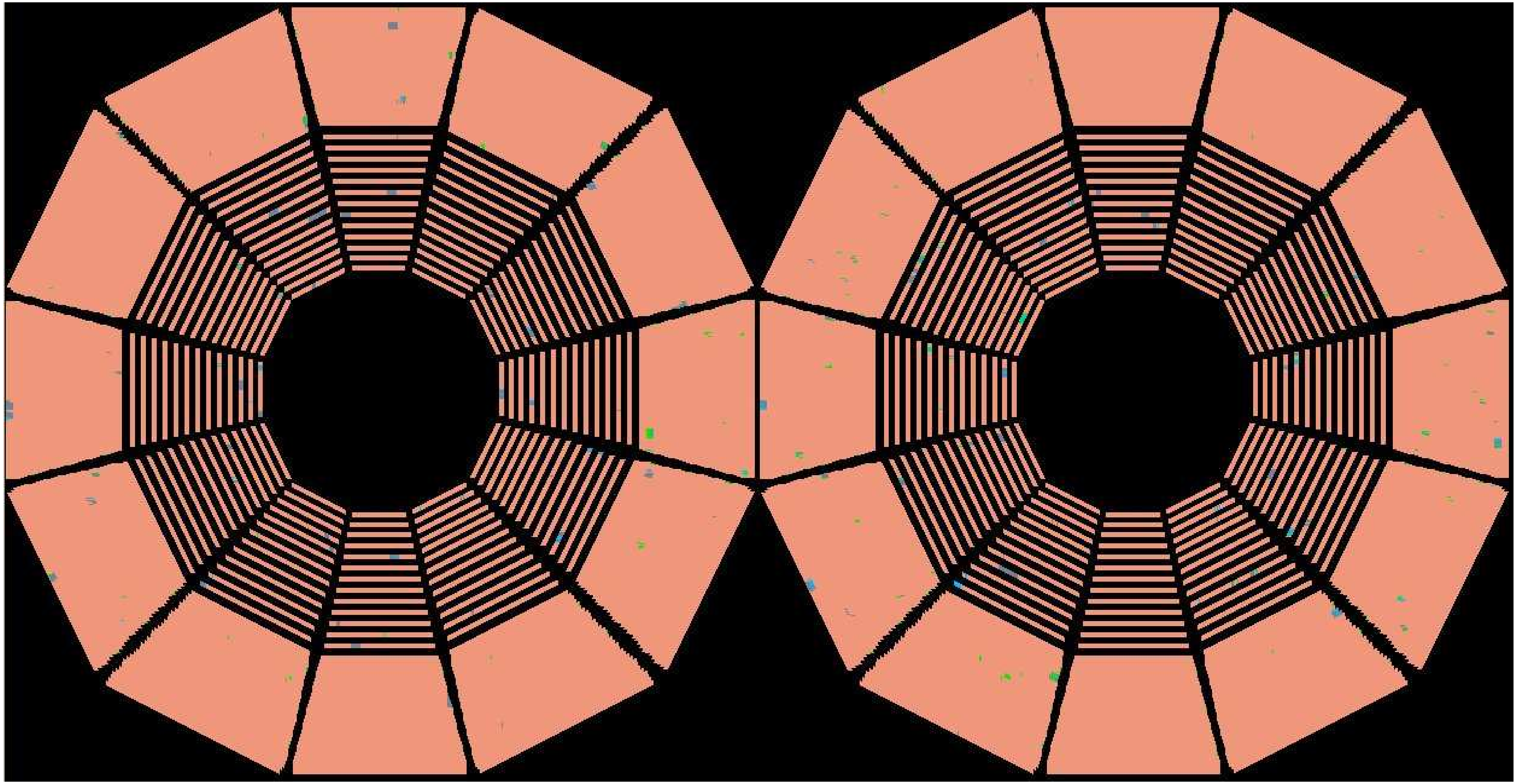
Outline

- Online: tracking down TPC failure
  - Current status
- Online $\Leftrightarrow$ offline
- Plan for Y3
- To do list

The TPC is not perfect!
Need to track down failures

- What fails?
  - Gas mixture ⇒ online velocity monitor
    - Precision need to be improved
  - Readout board (RDO)
    - Loss of several rows ⇒ need to carefully record failure
  - Front End Electronic boards (FEE)
  - Anode HV modules
  - … *cathode ⇒ we are dead!*

Current TPC status



Current TPC status

- Electronic is in good shape
  - Thanks to repair done last week
    - Thanks to Danny, Kenny and Javier
- HV module 20-5 flaky
  - May have to be turned off

Tools to track down failures?

- Online (Panitkin's) monitor
  - Crude drift velocity from laser
  - HV/electronic failures (but hard to see noise)
  - Can be used by shift crew
- Pad monitor for experts
  - Very reliable diagnostics from Blair
    - Only problem: no direct communication to offline
- Pulser and pedestal data analysis
  - In DAQ (Tonko) or online ("me") or offline ("me")

What offline needs to know about

- Bad runs
  - Tagged by shift crew and experts
- Bad channels (for simulated data)
  - Y1/Y2 from offline analysis of pulser data
  - Y3 from DAQ100
    - need to access bad channel list
- Electronic gain and t0 correction
  - Y1/Y2 apply offline (st_tpc_daqmaker)
  - Y3 done by DAQ100
    - If offline cluster finder used, need to get gain and t0 from DAQ

Plan for Y3

- Failure tracking by shift crew (online display), DAQ100 and experts
- Bad channels tagged by DAQ100
  - Need to fill up offline database
- Gain and t0 corrections from DAQ100
  - Applied automatically for DAQ100 data
  - Need to fill up offline database for “pixel”data

To do list

- Improve online display
  - Better display of channels to see noise
  - Compare current run to a reference run
  - Better online drift velocity calculation
- Connect DAQ100 to offline database (**critical**)
  - Need to access gain table, t0 table and bad pad table
- Improve pulser
  - check electronic linearity for dEdx study
  - Multiple pulses, different amplitudes, shapes, …

Dennis Reichhold
is taking over this job

My thanks to Alexei, Blair, Howard W, and Jim for their support during the last 2 years.