Quality of Data Monitoring

Monitor changes in the running conditions

Must monitor at full event rate for best response

Dedicated analysis program (qod)

Robot to look for changes in histograms

Methodology

- Establish the number of events needed to accumulate reasonable monitor histograms
- Establish a baseline set of histograms from the 1^{st} 10 buffers
- Compare each subsequent buffer of histograms with the baseline set.

Histogram comparisons

- Use hbook routine HDIFF
- Compares 1 and 2D histograms using Kalomogorov test.
- Returns probability that histograms are statistically equivalent.
- More reliable on 1D.
- Questionable hists saved for inspection.

What do we monitor?

- Hit wire distributions –dead or hot wires
- Time spectra / plane – window t0 for time windows 2 (muon) and 4 (positron) – drift times
- PC ADC distribution – Gas gain, stopping position
- PC 2D hists –beam spot
- Cross talk
- Pulser and scintillator scaler rates – rate changes

Status

- Monitor routine is coded (not debugged!) with 1st 5 histogram types.
- I can add additional histograms as needed.
- Testing on MC date is needed to determine the false alarm rate.
- Testing on MC data varying the histogramed variables with event number can be used to understand our sensitivity to changes and set monitoring parameters.