Test beam Histogram Requirements
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Summary

1 Interface to Calorimeters

The following histograms relating to energy observed in the Preprocessor and calorimeters, and accumulated over a run.

PPM LUT data refers to the triggered slice only. If there are teething problems with PPM readout, the LUT output can be obtained from CPM readout.

1.1 PPM Digital Data

- PPM LUT output, separately for each active PPM channel, ideally grouped as LAr or Tile. Neede for several slices initially, later only for the single triggered slice.
- Sum of all active PPM LUT e.m. LAr channels;
- Sum of all active PPM LUT hadronic Tilecal channels;
- Combined total energy seen in all active PPM LUT Channels (can be compared by eye with beam energy)

1.2 PPM FADC Data

- 5-slice PPM FADC output, histogrammed separately for each active PPM channel, refreshed each event.
- Scatter plots of above vs LUT output, integrated over all events.
- Noise on unconnected or not-hit channels.

1.3 PPM and Calorimeter Data

These need access to LAr and Tilecal energies per event.

- Histogramed ratio of PPM LUT to calorimeter energy, separately for total e.m.only, total hadronic only, and combined total energy.
- Scatter plots of the above (PPM vs Calorimeters).
- Scatter plot of peak PPM e.m. channel numbers vs peak LAr cell number (check of mapping)
- Scatter plot of peak PPM hadronic channel numbers vs peak tilecal cell number (check of mapping).

1.4 Internal L1Calo – Publicity

Using internal L1Calo and Calorimeter data

- Histogram difference between PPM LUT output and CPM and JEM input
- Scatter plot total (PPM or calorimeter) e.m. energy seen vs electron thresholds fired.
- Scatter plot combined total (PPM or calorimeter) energy seen vs sum-ET hits seen
- Scatter plot of combined total (PPM or calorimeter) energy seen vs Jet thresholds fired.

2 Interface to CTP

Assuming trigger type is set to reflect the trigger source, it gives a good summary of the reason for the L1A decision. So…

- Scatter plot of electron hits, jet hits, energy hits vs trigger type. Hopefully this shows little or no calo activity for muon triggers, and no muon trigger types for electron hits.

3 Technical Details

- Scatter plot of ROD-BUSY percentage vs L1A instantaneous rate..