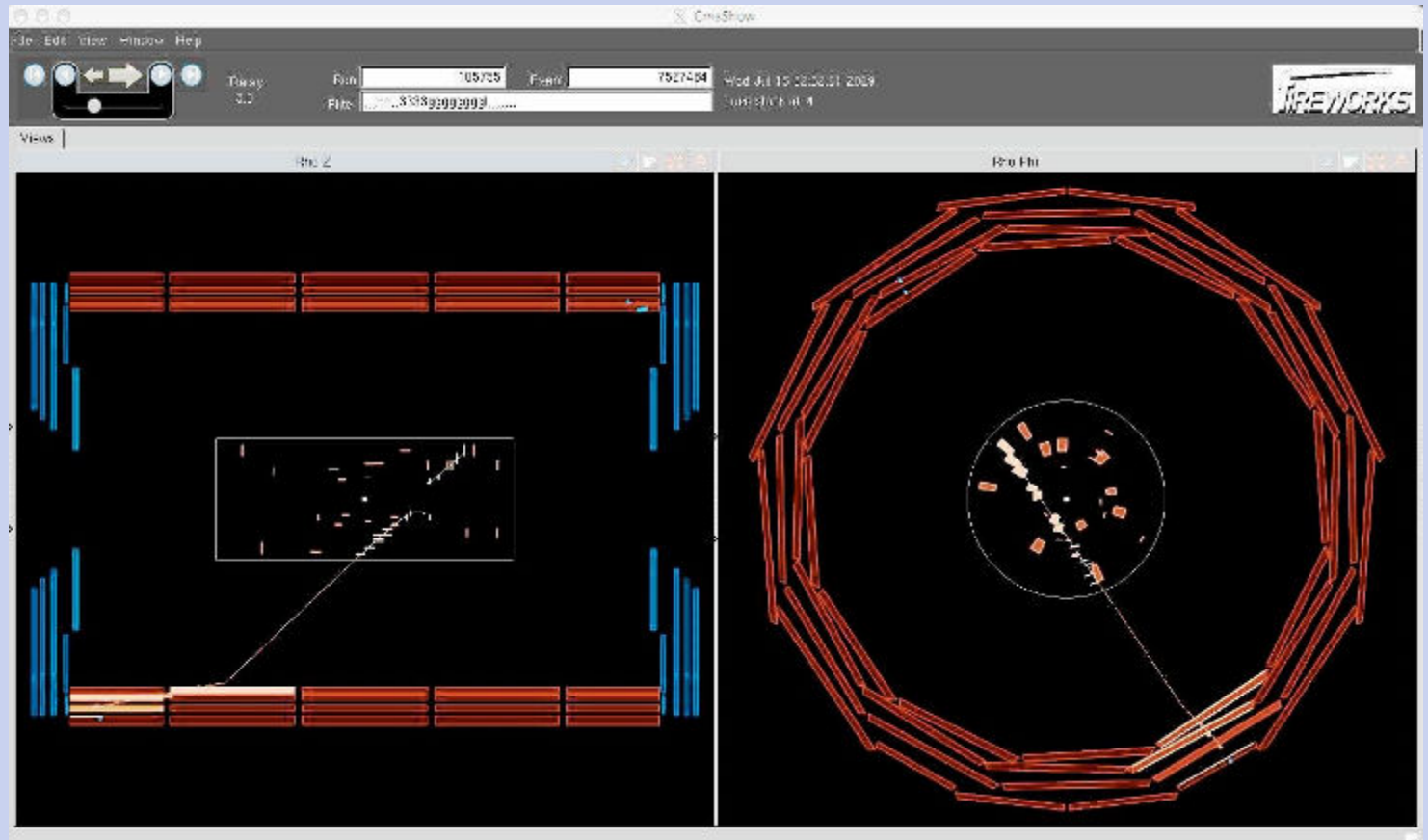# CMS Tracker Commissioning

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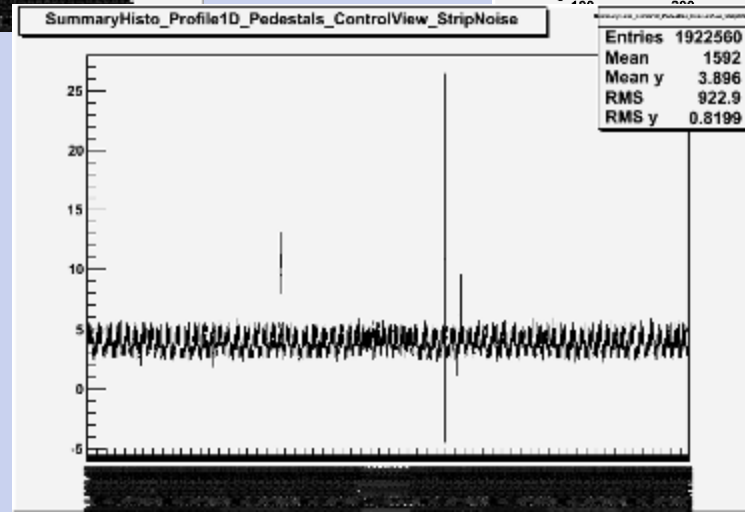
Recent Data Runs
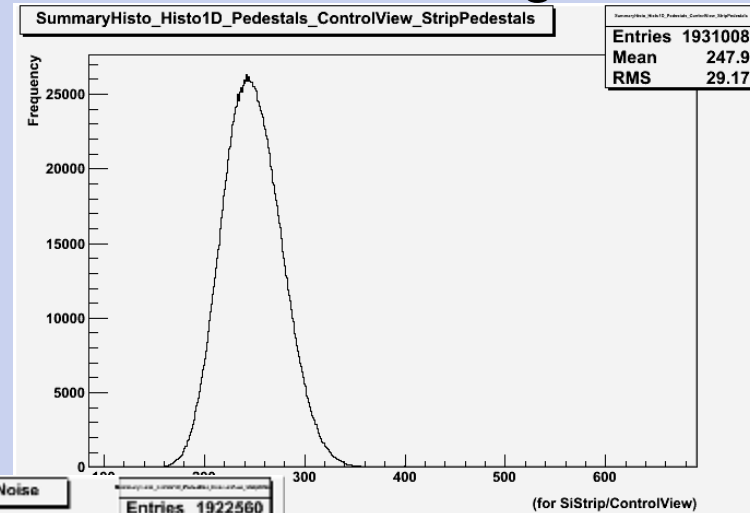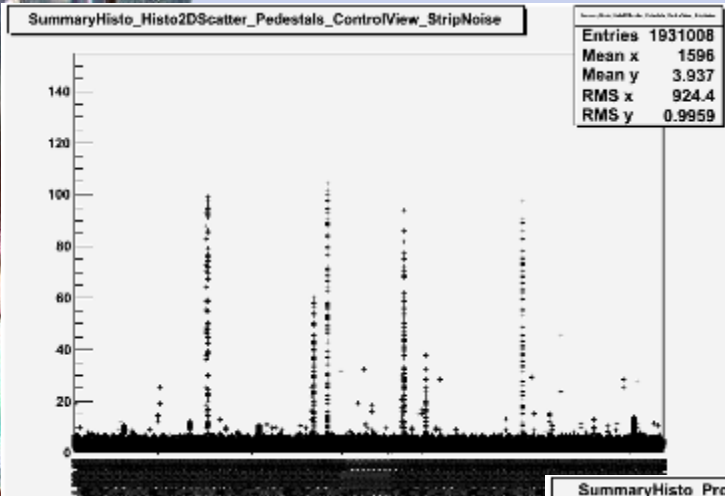

- Cosmic muon data results

- There are still some noisy modules - more commissioning/calibration required

Noise Analysis

• Goals – find and eliminate noisy strips to minimize the amount of noise in the detector

• noisy strips are found from pedestal runs – repeated readout from the tracker in the absence of a signal

My ROOT Macro

- Analyzes and compares 1D histograms from pedestal runs

- Want to compare earlier runs with more recent ones to see if problems have developed over time

- Input – 2 ROOT files taken at different times (CRAFT 2008 and now)

- Output – plot overlaying the two histograms, statistics such as standard deviation and mean, a list of outliers (noisy strips) that are in both histograms, and a list of outliers that are in only one of the histograms

- Algorithm for finding outliers –
    1. make a copy of the histogram
    2. Eliminate points whose distance from the mean exceeds a value that depends on the max distance from the mean.

    3. Add these points to the list of outliers.
    4. Repeat until the distribution reaches a specified fraction of the original standard deviation.
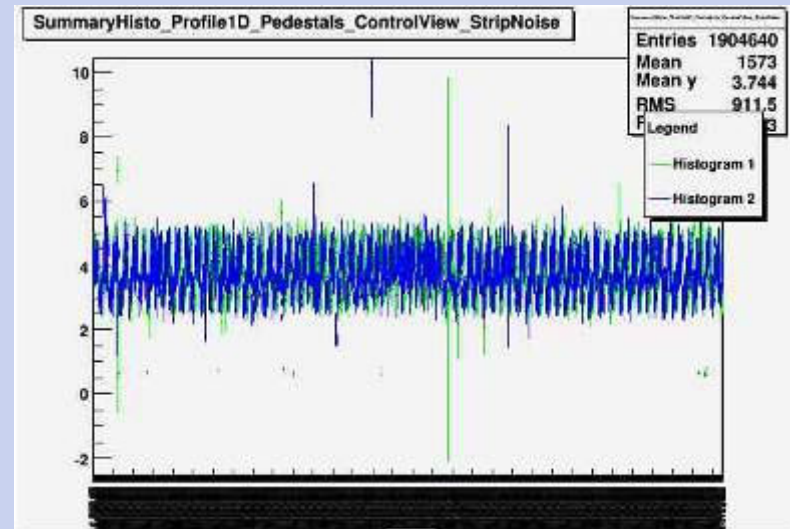
Goals

• Modify my macro to compare other types of histograms from pedestal runs – StripPedestals, NumofNoisyStrips, etc

• Write a macro to analyze calibration runs – pulse shape, rise time, amplitude, etc.

    • Purpose – to fine tune the pulse shape of the output signal

    • Why? This affects synchronization with the LHC as well as the signal to noise ratio

Questions?