

# **Bad Strips for DC2**

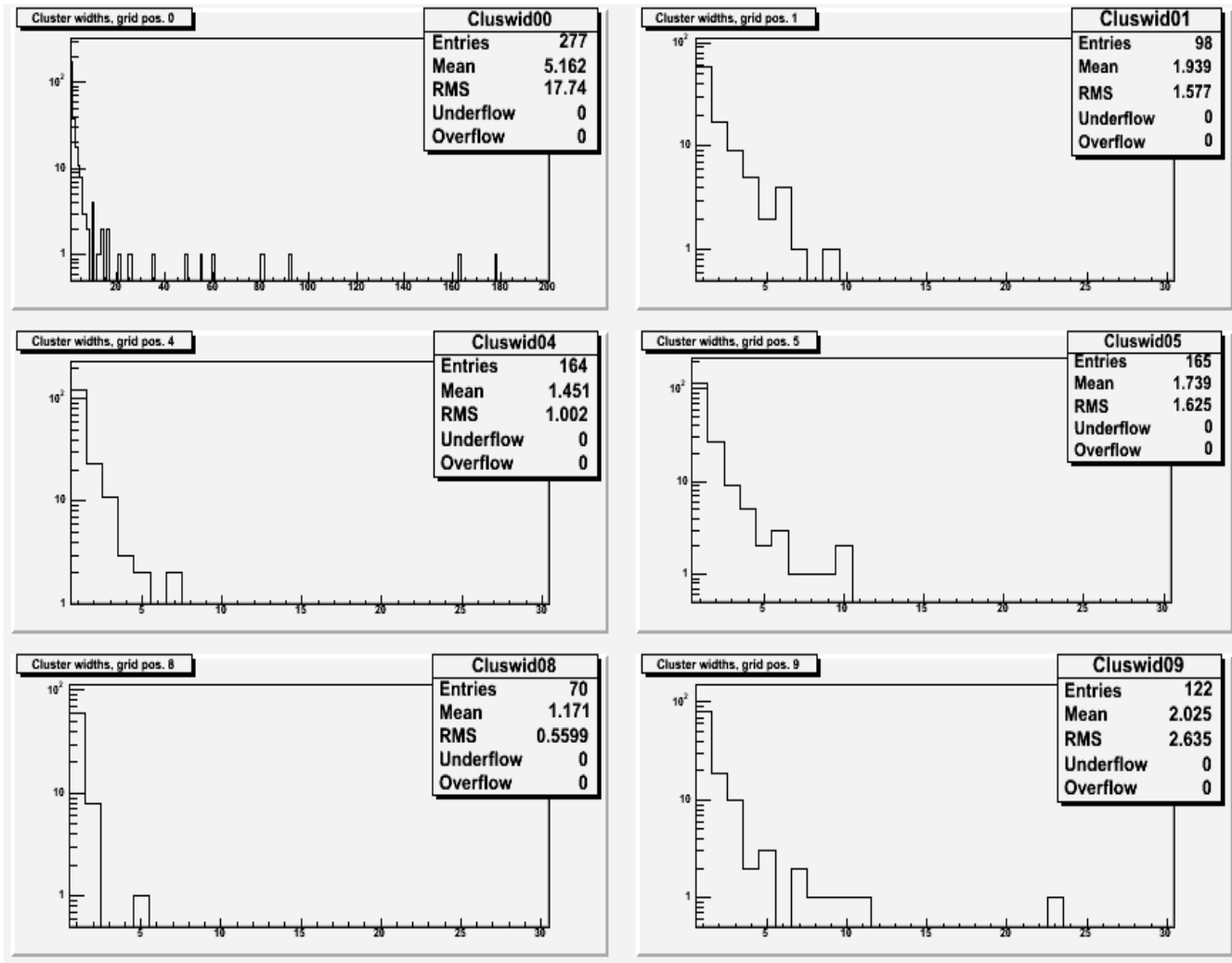
**Leon R.**

**Calibration and Analysis Mtg**

**July 11, 2005**

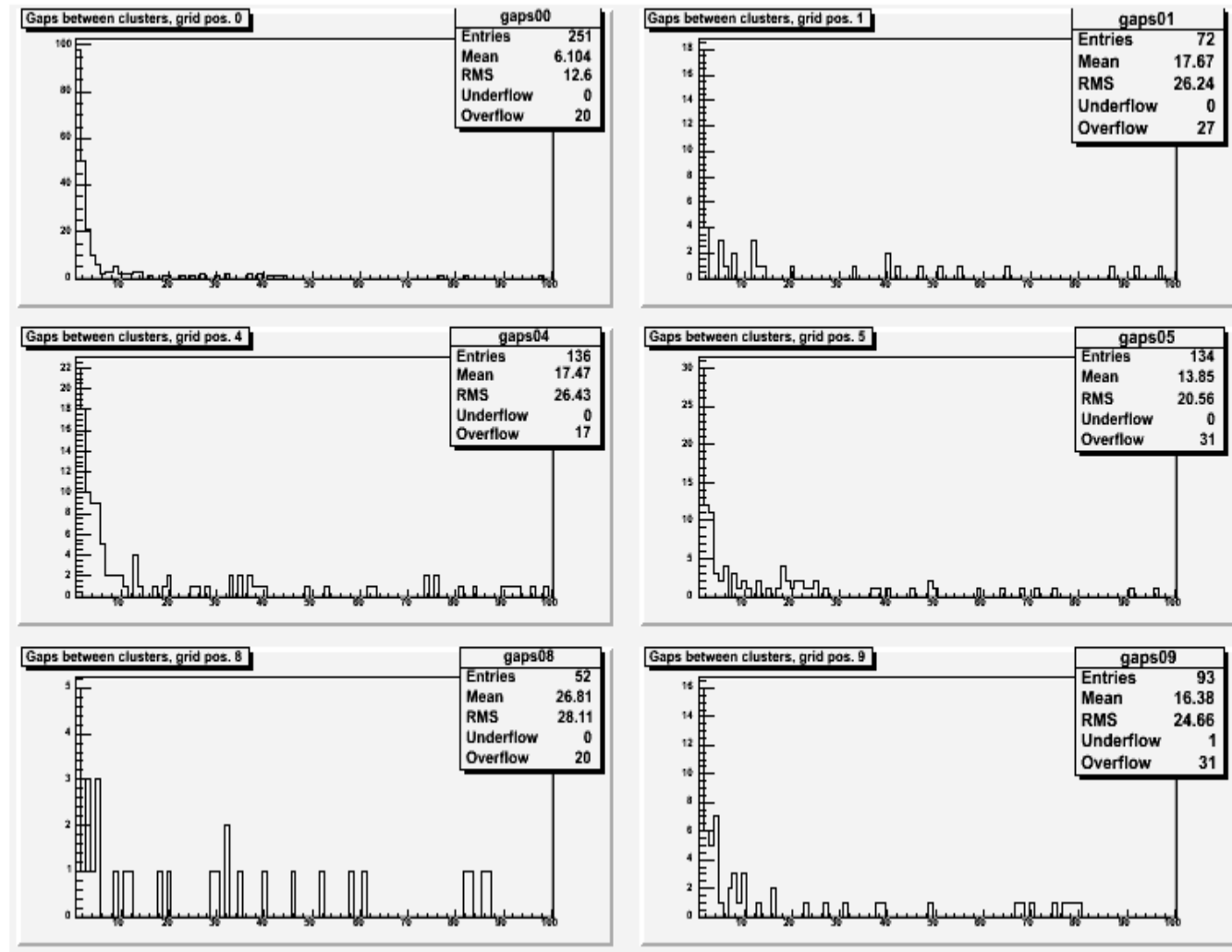
- The following plots are based on the actual dead-strip files for the first six towers, including intermittents and partials.
- Adjacent dead strips are grouped into clusters.

# Cluster widths for each tower



*Except for Tower A (bay 0), all towers are similar.*

# Gaps between Clusters

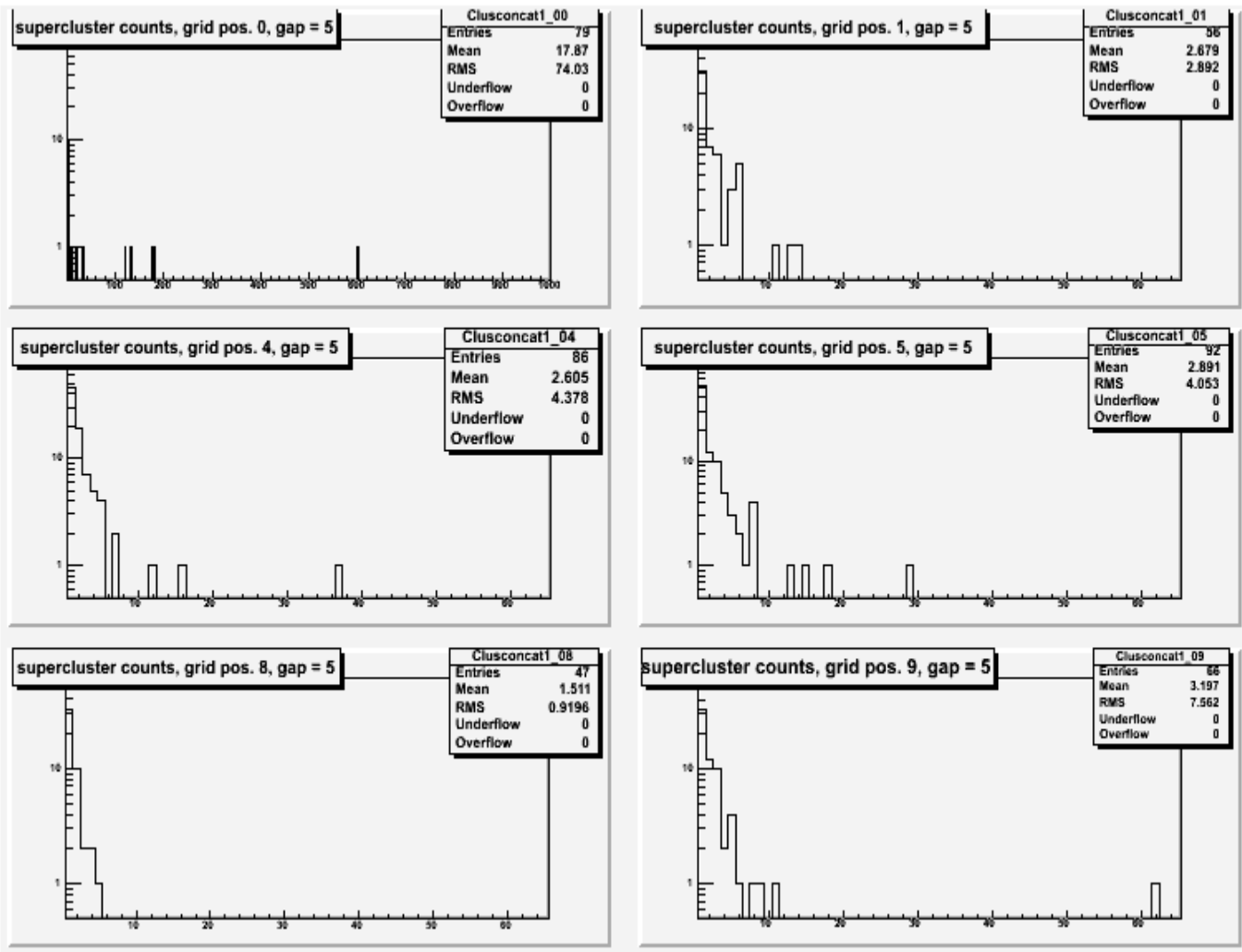


*Note preponderance of low gap values*

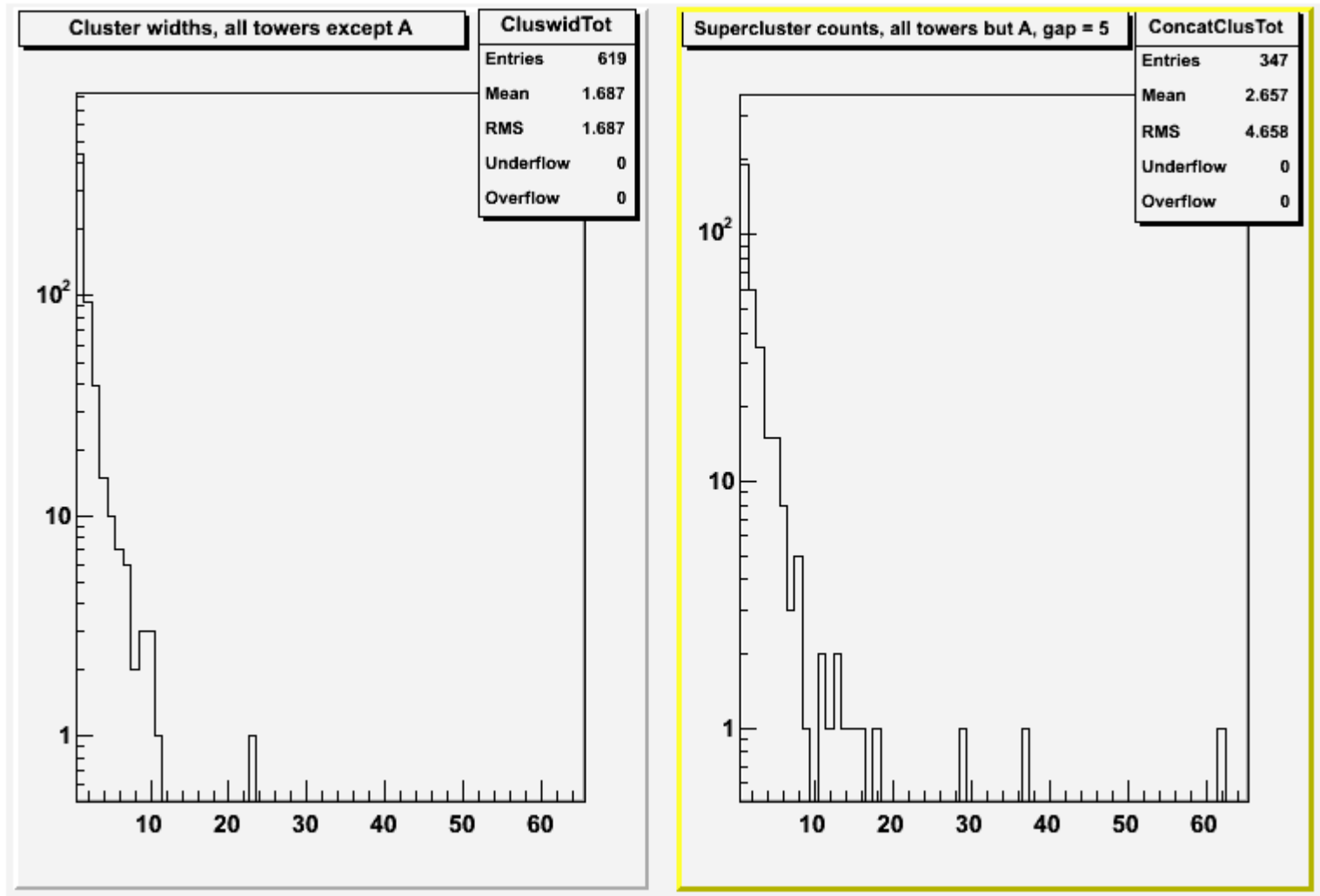
# Superclusters!

- Clusters tend to occur near each other.
- Define a supercluster as a group of clusters separated by a maximum gap of maxGap, here set to 5.
- Count the number of strips in each supercluster. This is the supercluster *count*, as opposed to the width, which would include the gaps.

# Supercluster Counts



# Totals for all Towers (except A)



# Some Observations

- Excluding Tower A:
  - 0.37% dead strips
  - 0.22% dead clusters (  $\langle \text{width} \rangle = 1.68$  strips)
  - 0.12% dead superclusters (  $\langle \text{count} \rangle = 2.66$  strips)
  - Very few large clusters
    - Only two (out of 619) dead clusters with width  $> 10$
    - 10 superclusters (out of 347) with more than 10 counts
  - There are a fairly small number of intermittents and partials in this sample, and most are adjacent to fully dead strips.



# Proposal

- First we need to decide whether Tower A (bay 0) will be included in DC2, given that there's some chance it will be replaced in the final configuration.
  - If so, put it in!
- For bays 1, 4, 5, 8 and 9, use the actual lists.
- For the rest, randomly select planes from the 5 “good” towers.
  - reproduces the frequency and strip-to-strip correlations
  - is unlikely to introduce any correlations at the track level

# Actual Procedure

- Make a list of 180 planes from the 5 good towers.
- Generate a new set of 5 towers using modulo arithmetic with a prime modulus — a deterministic shuffle.
  - Ensures that each plane is used once and only once
- Repeat with a different prime modulus, and access the list backwards, for good measure!

# Final cluster distributions

