

Control plots for photon transfer studies

(Dated: June 25, 2013)

This is set of summary plots verifying the performance of Cherwell for photon transfer curve studies, and validation of the common mode subtraction algorithm used.

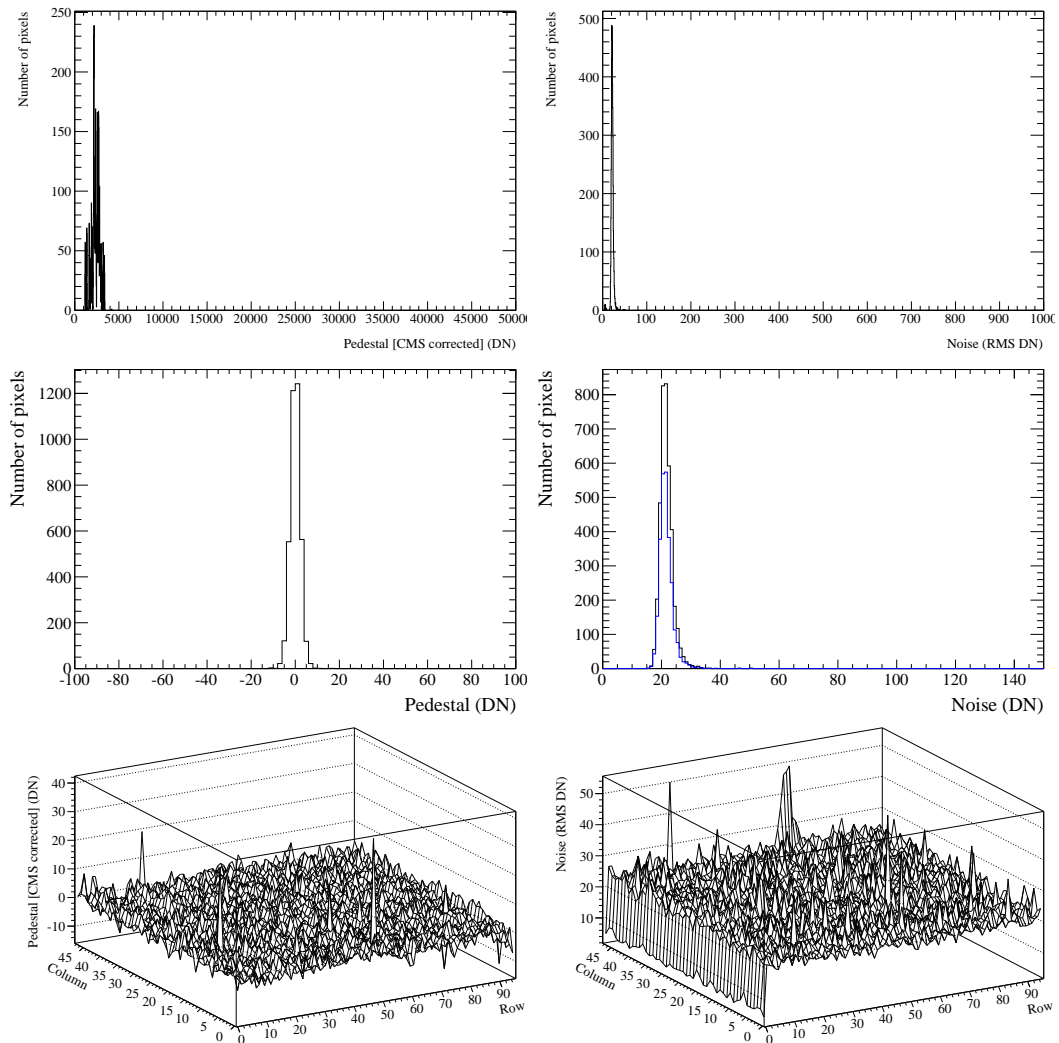


FIG. 1: (left) the pedestal, and (right) noise values for all reference array pixels in ADC counts for (top) all pixels, (centre) all pixels, except the outer two rows and columns, and (bottom) as a function of position in the pixel array. The spike apparent at low noise values corresponds to the known pathological row 1. This is the standard ReadCherwellPix algorithm. The blue histogram (noise, centre right) has the additional constraint of removing rows below 30, as well as at the edge of the array.

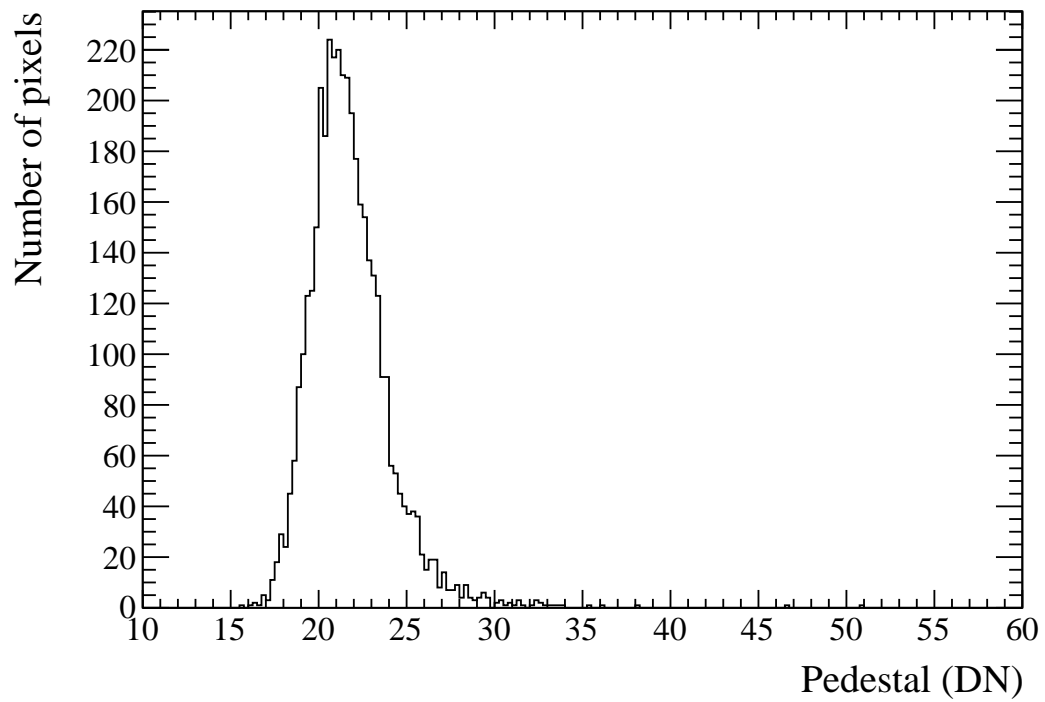


FIG. 2: The distribution of noise for the ensemble of pixels (excluding 2 rows/columns at the edges) after CMS.

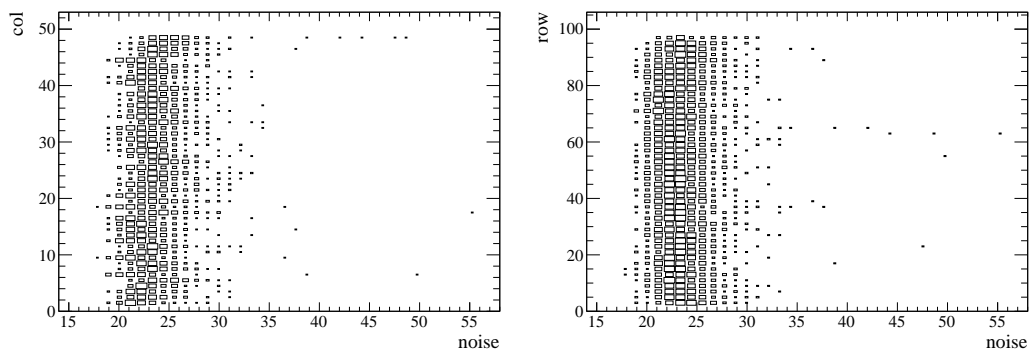


FIG. 3: The distribution of (left) columns and (right) rows versus the RMS noise.

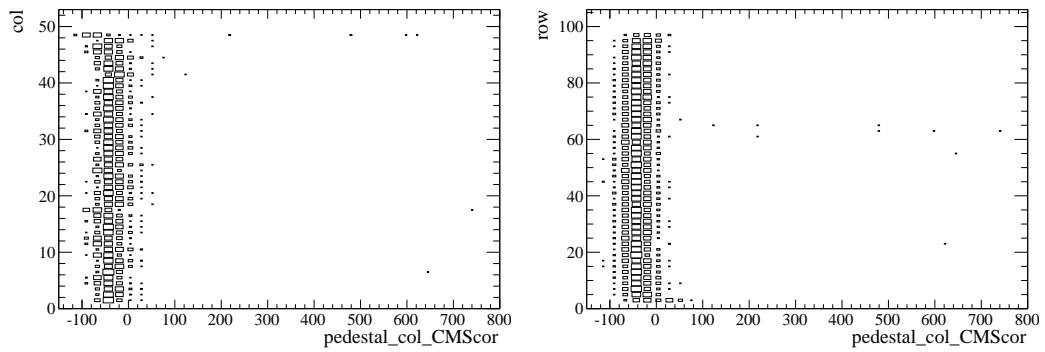


FIG. 4: The distribution of (left) columns and (right) rows versus the raw ADC count corrected for column-based common mode pedestals. These pedestal corrections are calculated as the average offset for rows 31 through 95. The first thirty, and the last row are excuded as these are non-trivially correlated with the pedestal value. Column 48 is problematic.

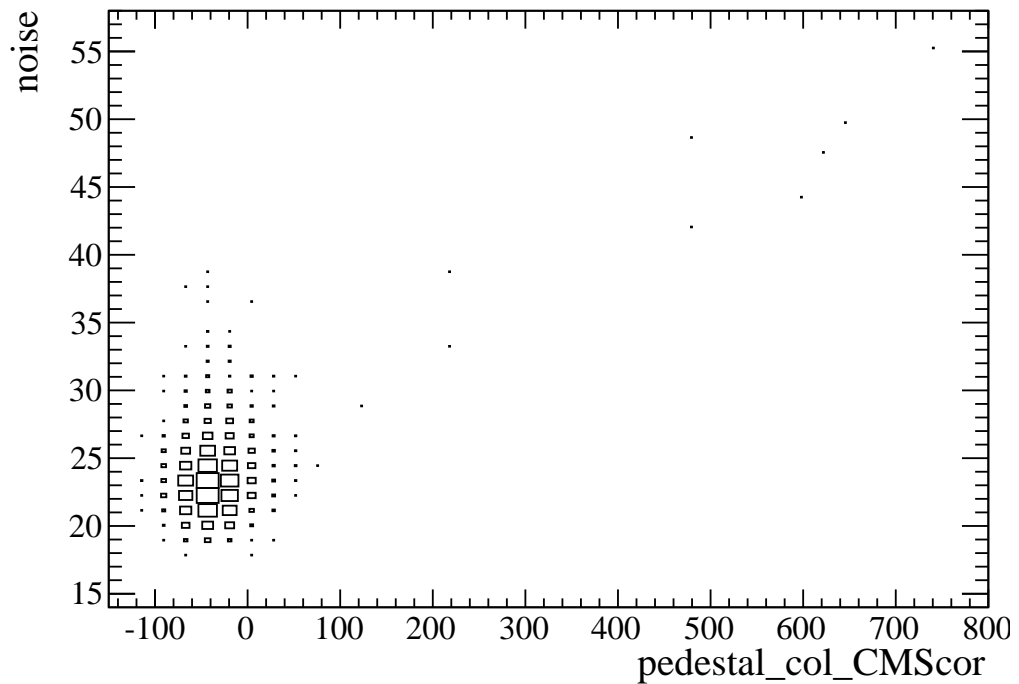


FIG. 5: The distribution of noise versus the raw ADC count corrected for column-based common mode pedestals. These pedestal corrections are calculated as the average offset for rows 31 through 95. The first thirty, and the last row are excuded as these are non-trivially correlated with the pedestal value. Column 48 is problematic.

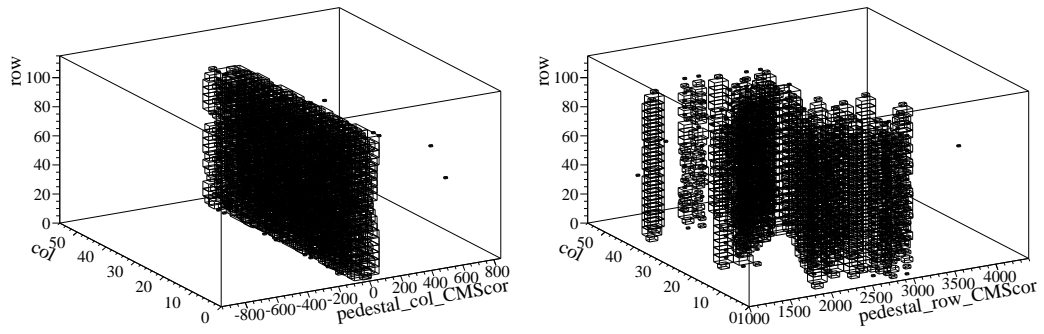


FIG. 6: The distribution of (left) columns and (right) rows corrected pedestals as a function of pixel position in the array for 200 triggers in a run.

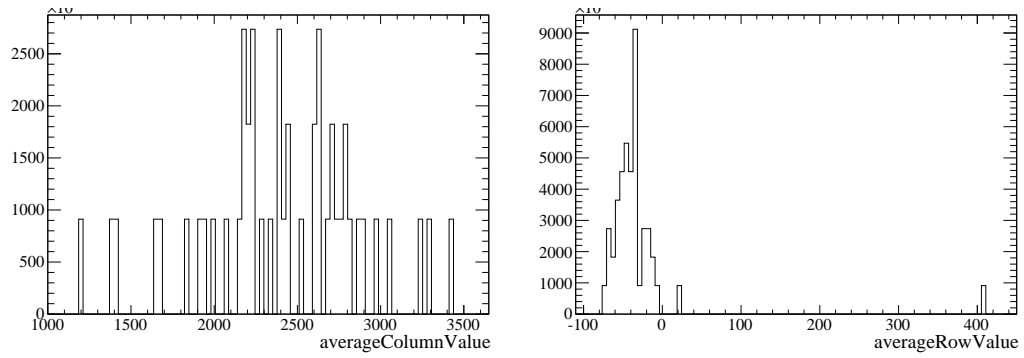


FIG. 7: The distribution of (left) column and (right) average pedestals used for the CMS correction. Note that the column correction is applied before the row offsets are calculated.

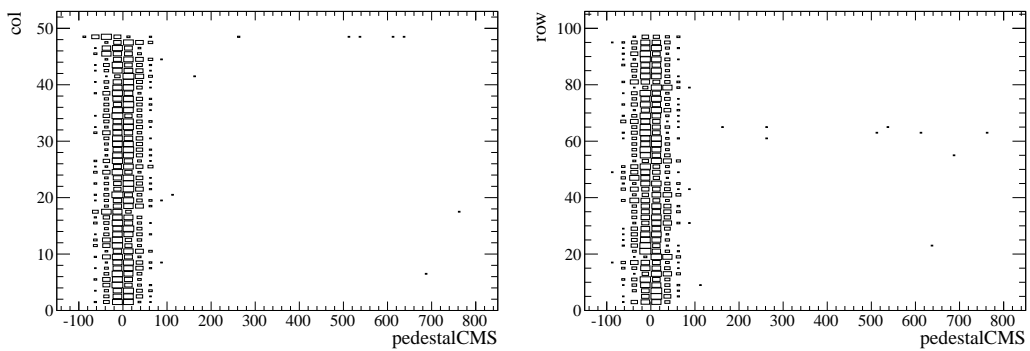


FIG. 8: The distribution of (left) columns and (right) rows versus the CMS corrected pedestal ADC count.