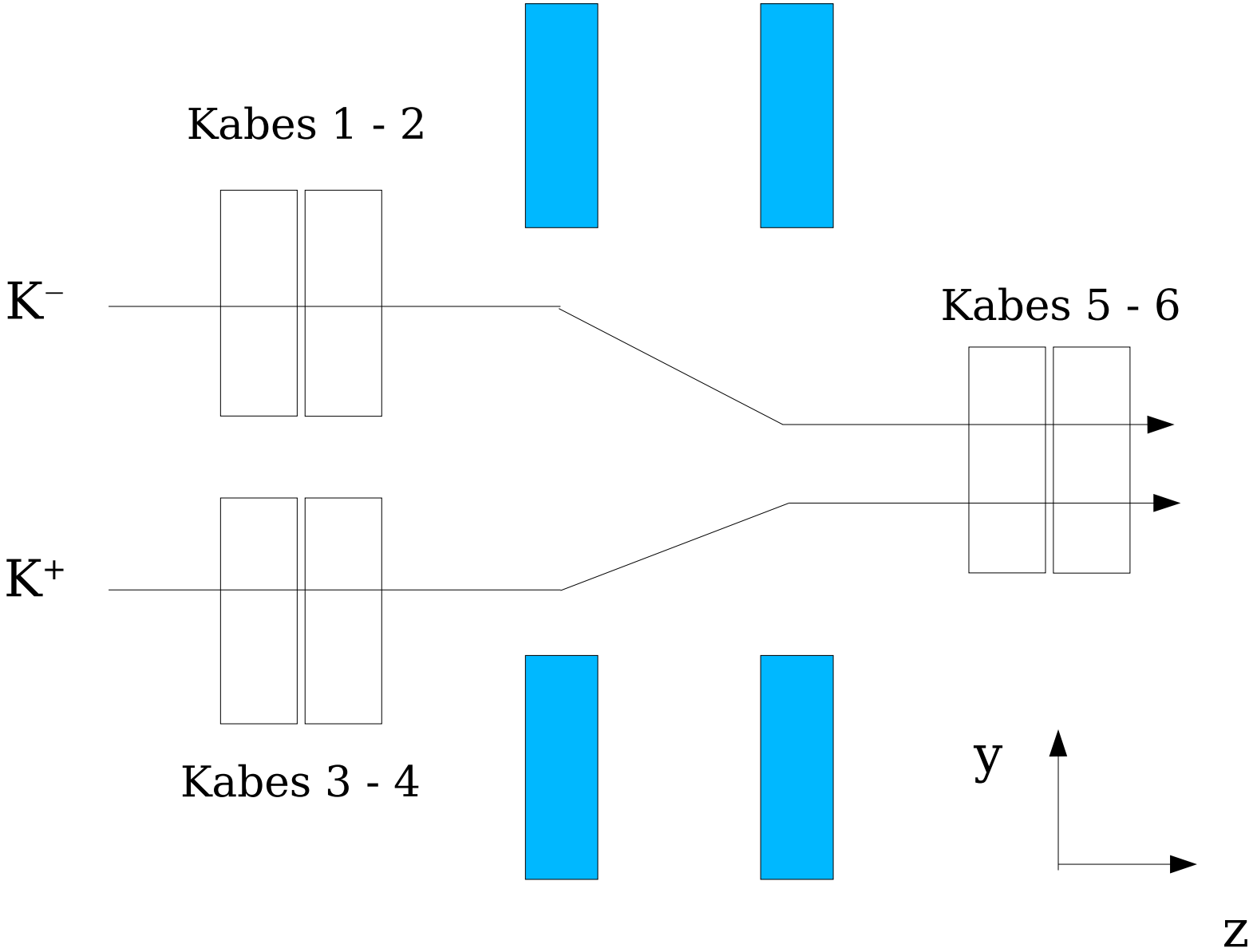


Figure 1: Kabes Layout

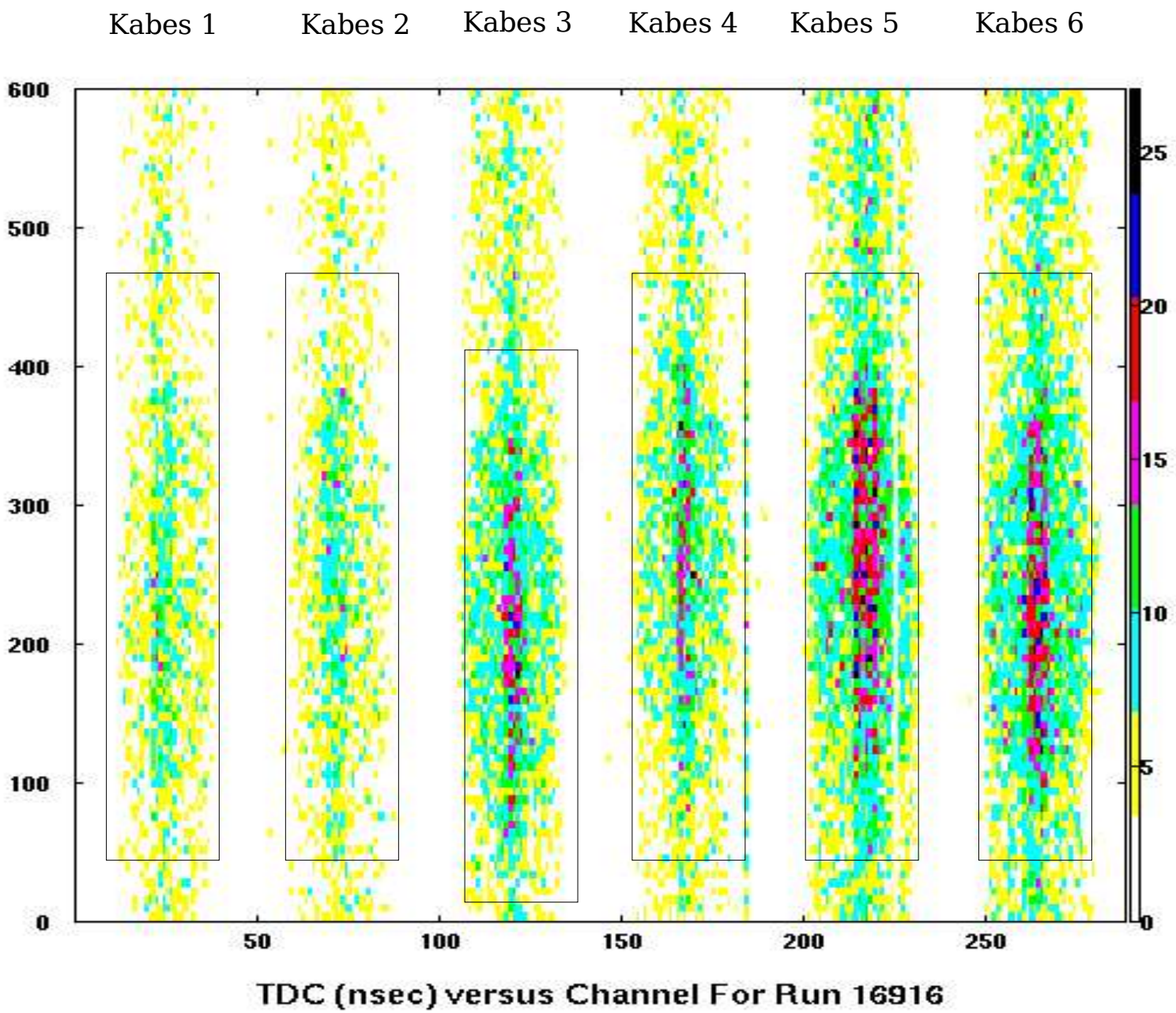


Figure 2: TDC hits versus channel number. Boxes denote intime hits.

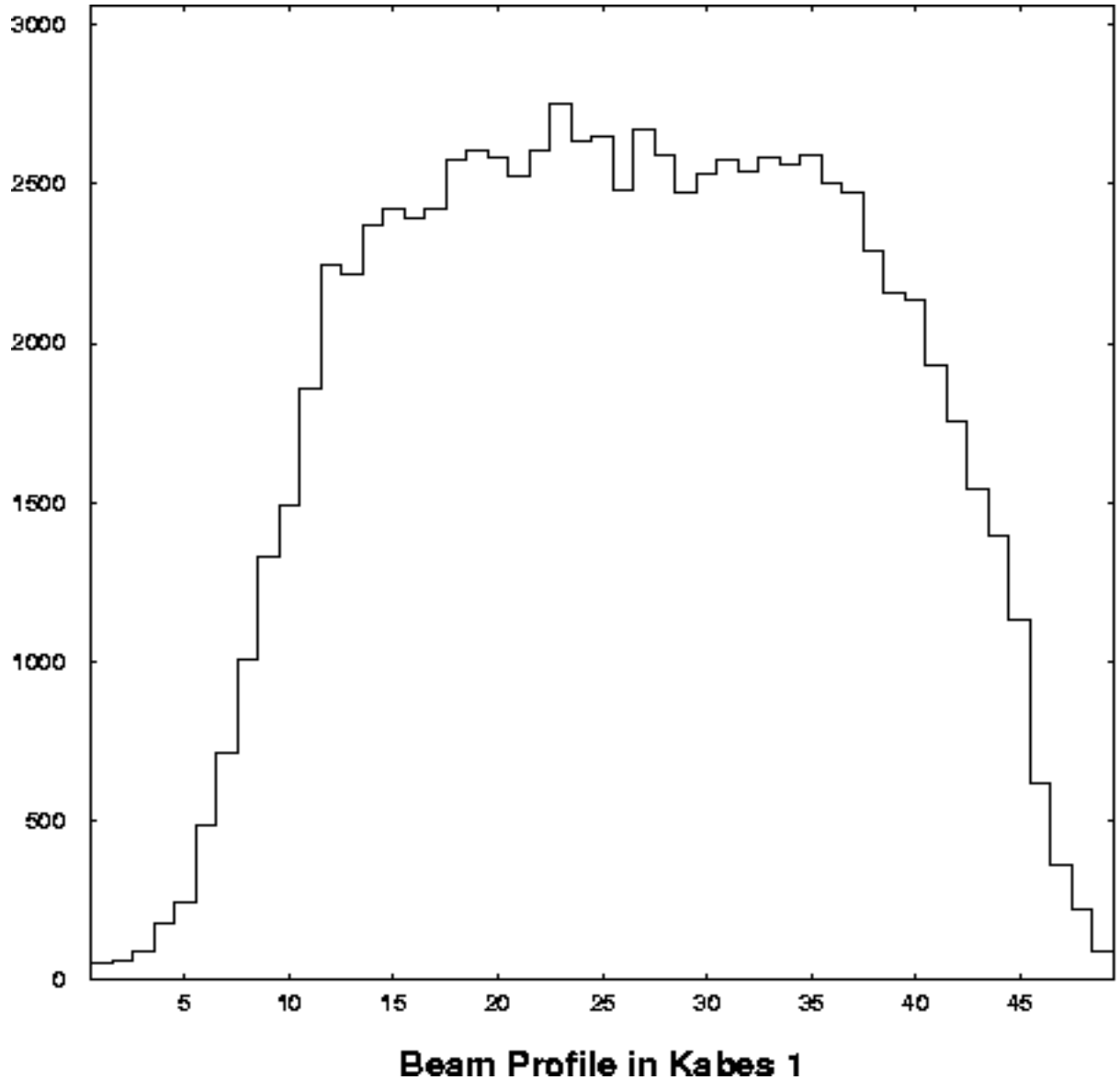
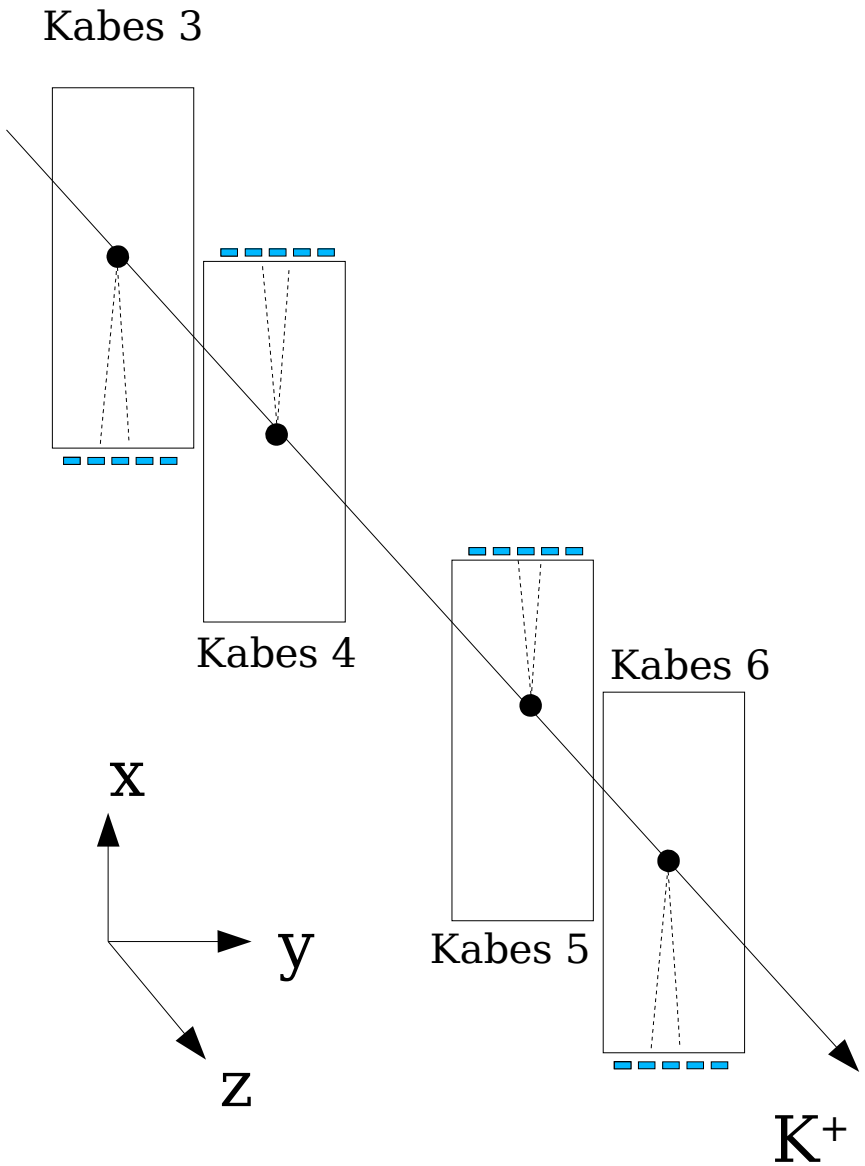
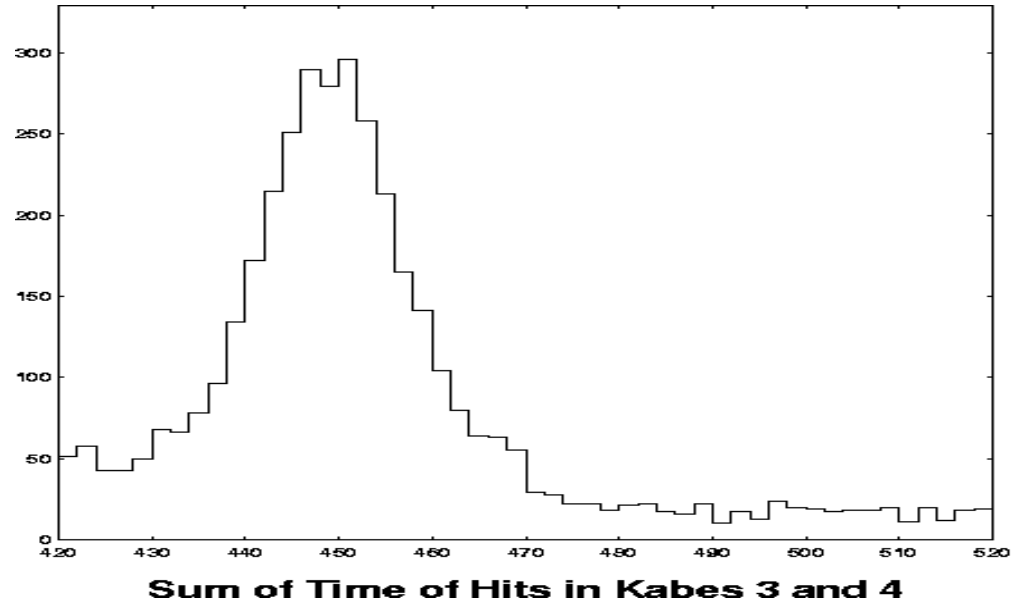


Figure 3: Beam Profile in Kabes 1. The anode strip pitch is 800 μm.





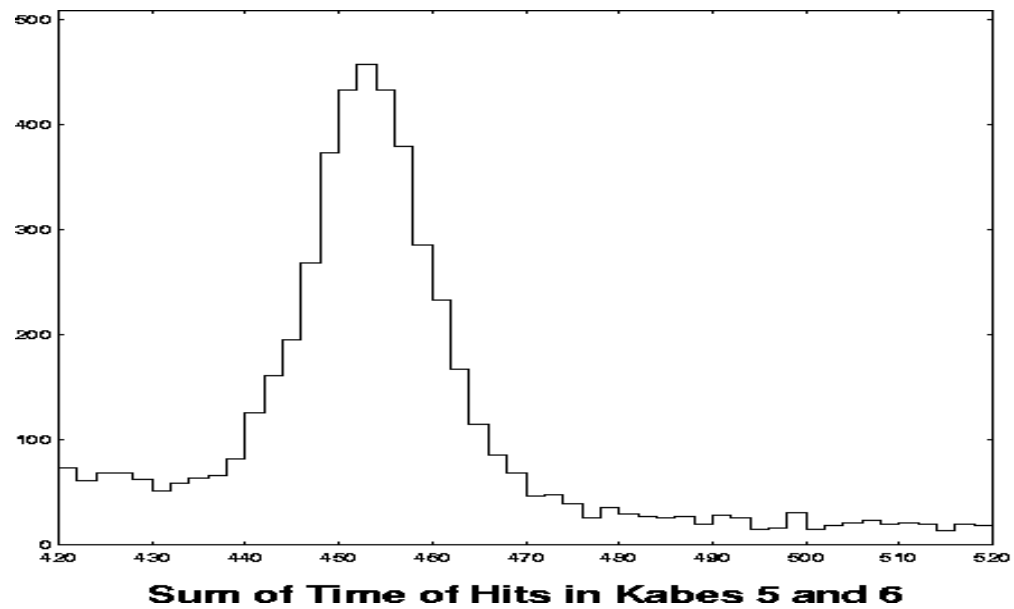


Figure 4: Sum-of-Time Pairs in Complementary Chambers. Good pairs are defined as being within 22 counts (~3σ) of the peak.

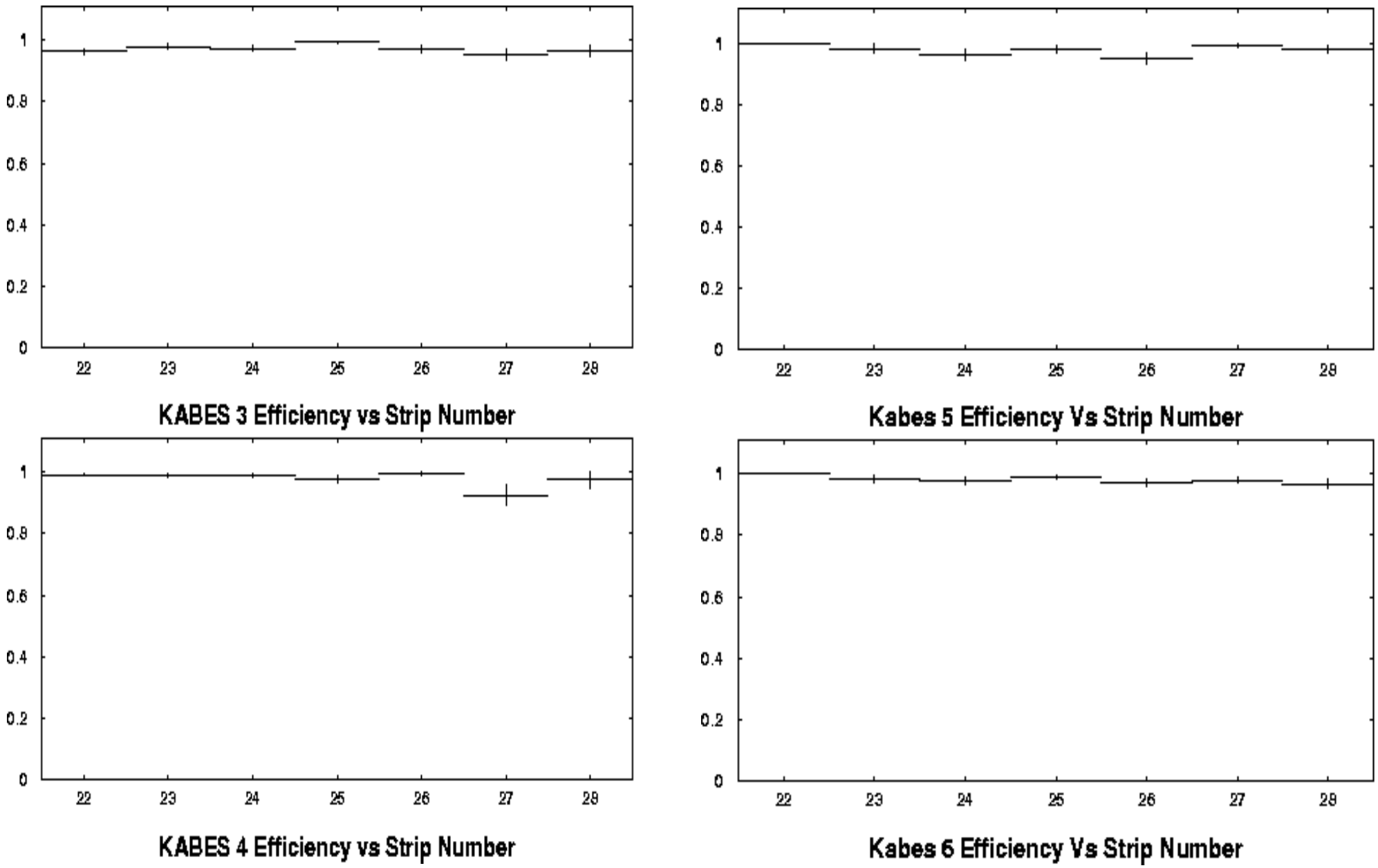


Figure 5: Hit efficiency versus strip number for 7 central strips.

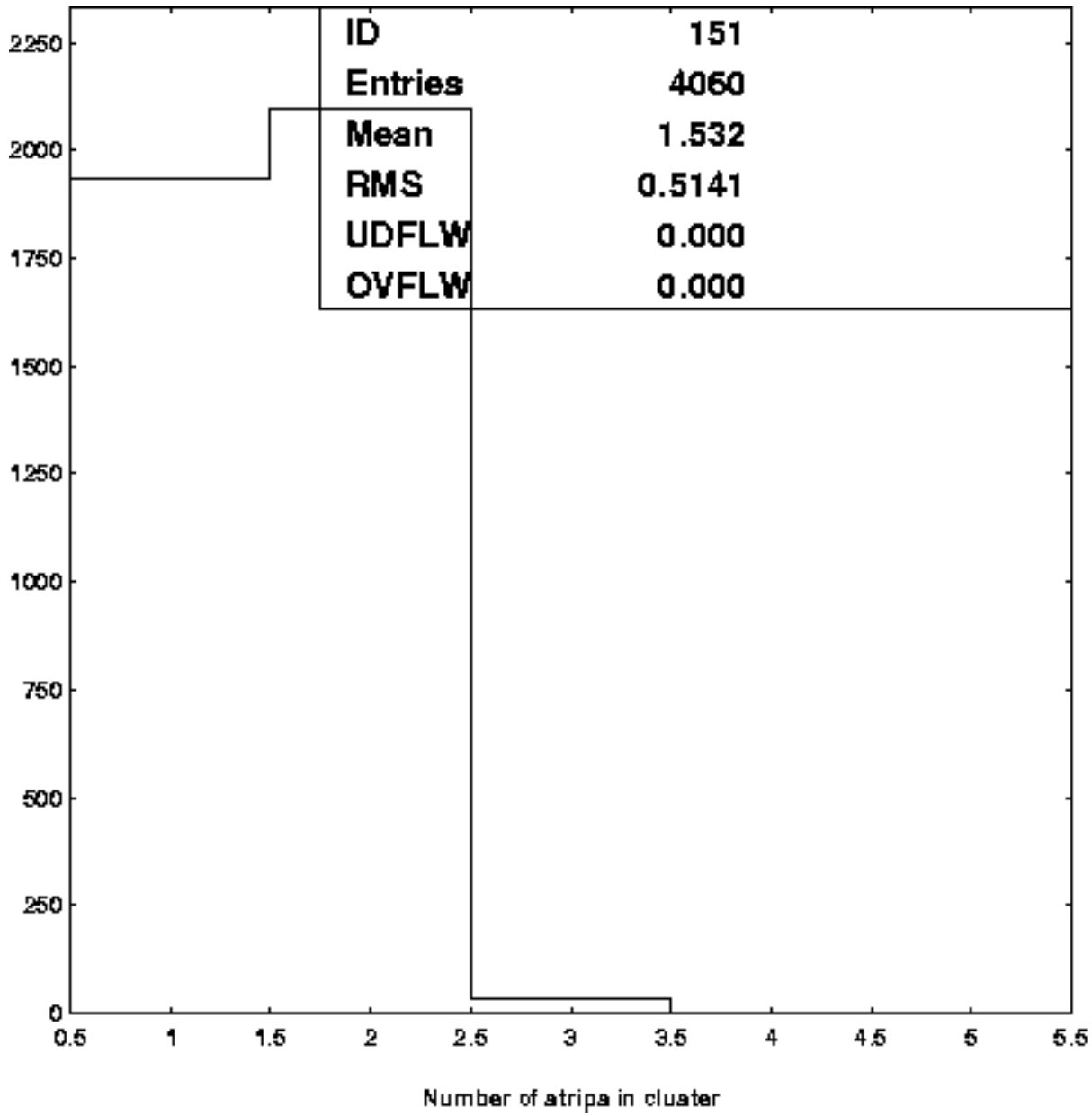


Figure 6: The cluster size parameter

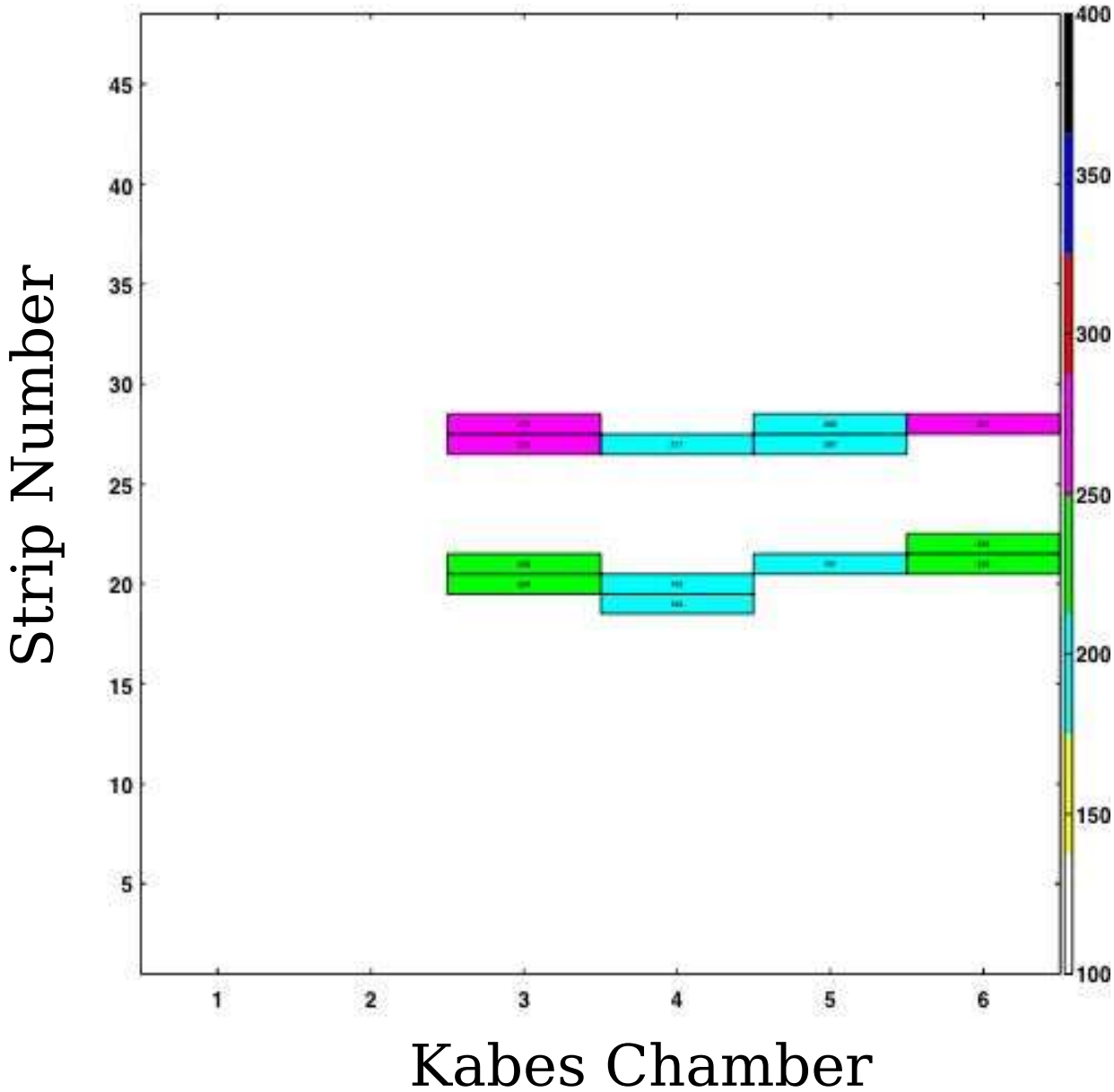


Figure 7: Display of two positive tracks traversing Kabes chambers 3, 4, 5 and 6. The strip numbering in Kabes 5 and 6 have been inverted (see text). The colors indicate TDC hit values. Note that tracks often leave two hits in a Kabes chamber (see figure 6).

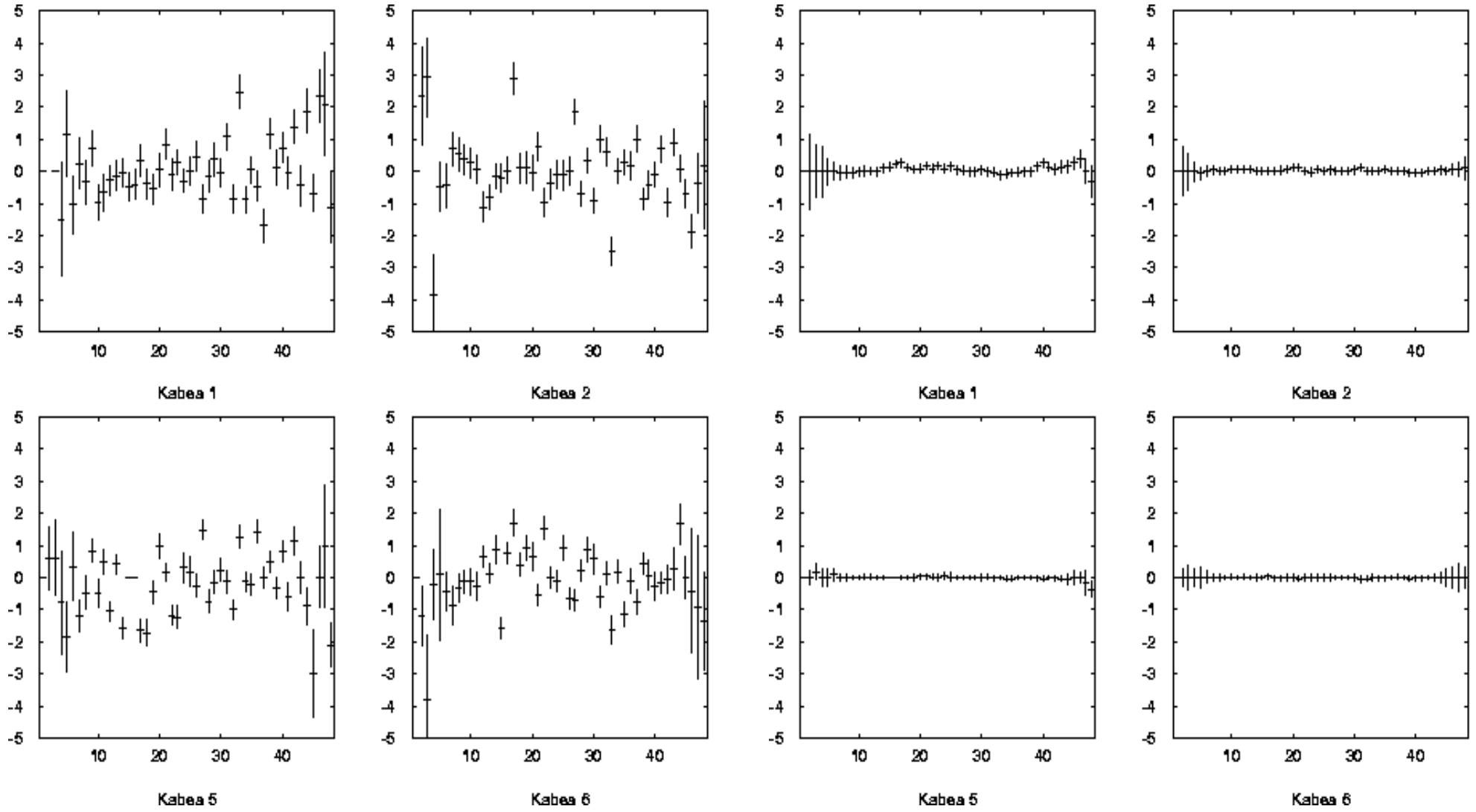


Figure 8: Difference in time between hits in a doublet versus strip number. Left (right) 4 histograms shows the quantity before (after) calibration.

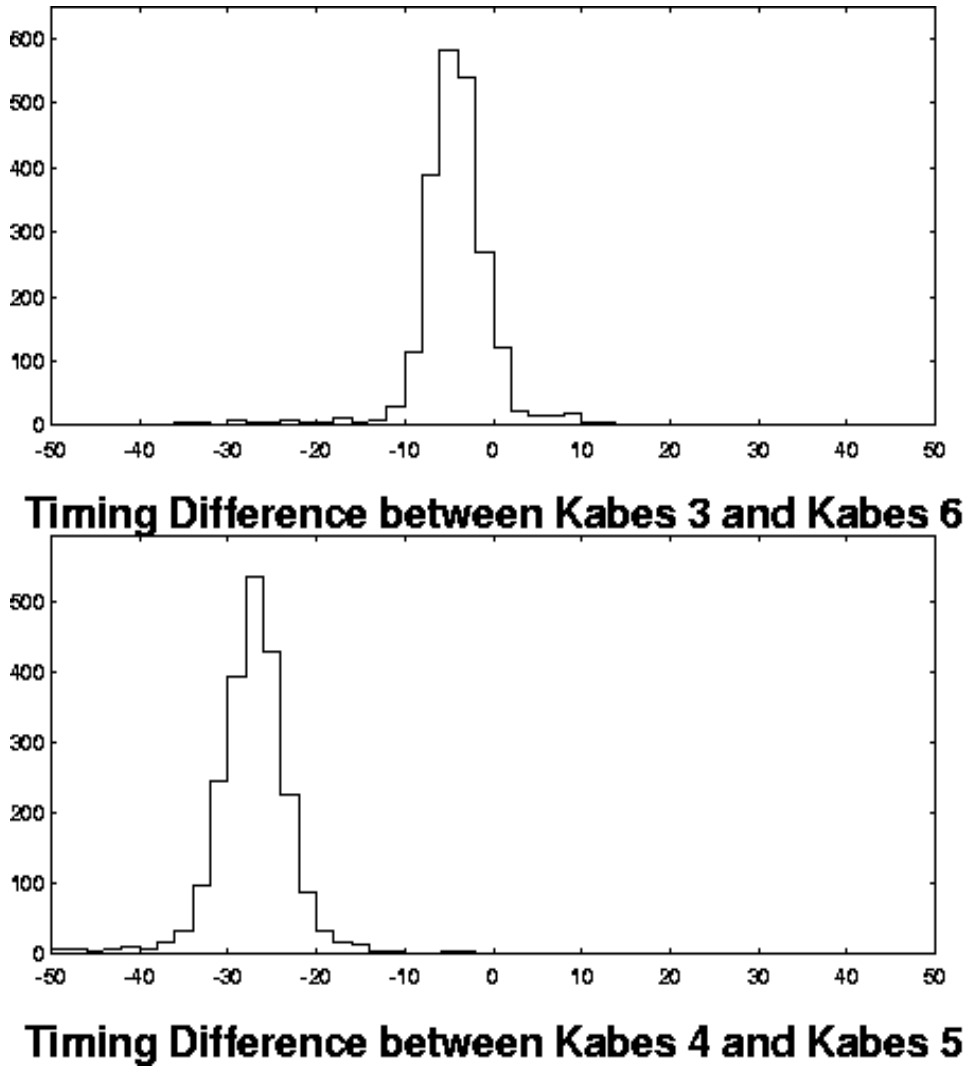


Figure 9: Timing difference between hits, associated to a track, in chambers of the same drift direction, showing the global offsets.

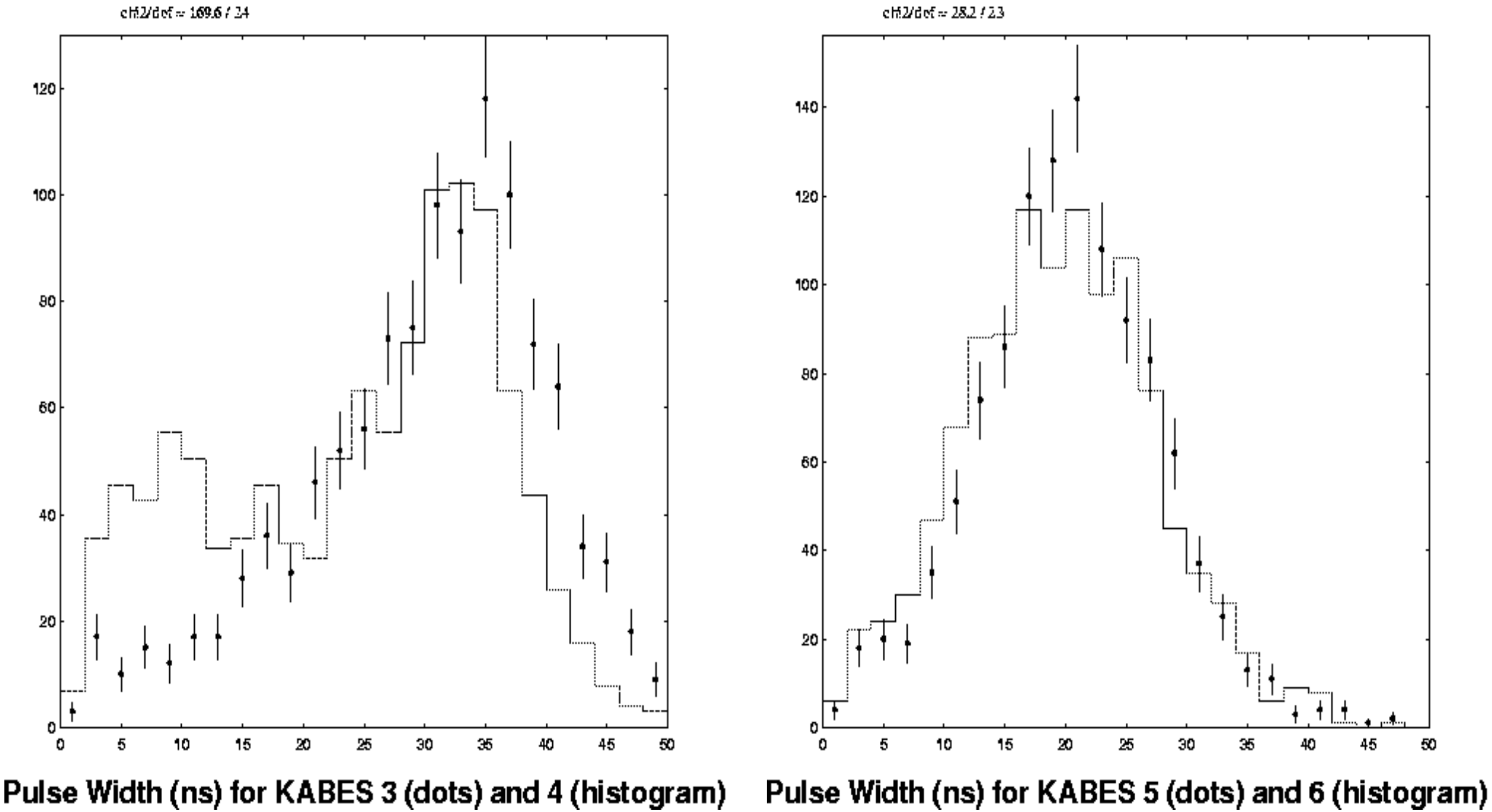

chi2/dof = 169.6 / 24
chi2/dof = 28.2 / 23
Pulse Width (ns) for KABES 3 (dots) and 4 (histogram)
Pulse Width (ns) for KABES 5 (dots) and 6 (histogram)

Figure 10

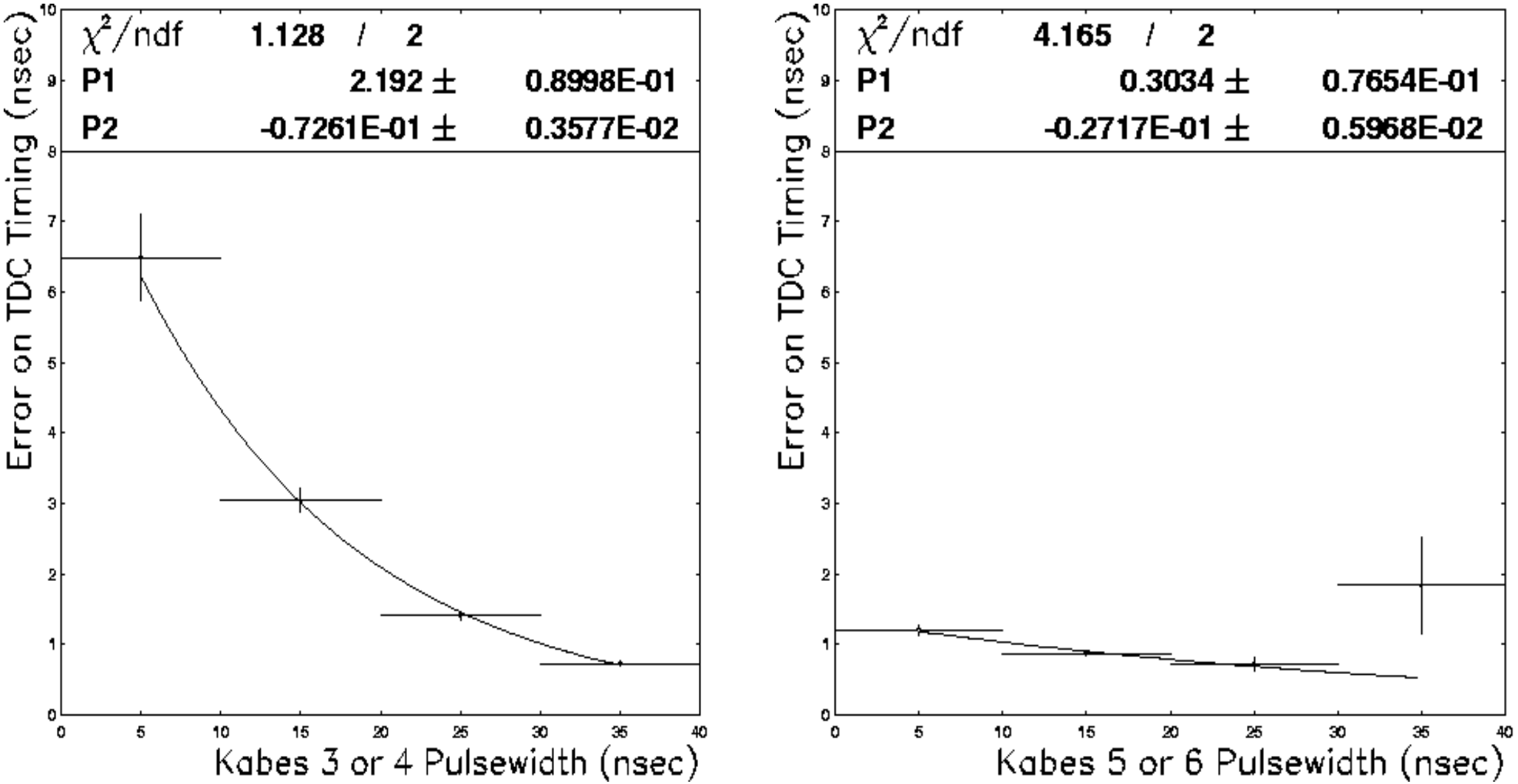

χ²/ndf 1.128 / 2
P1 2.192 ± 0.8998E-01
P2 -0.7261E-01 ± 0.3577E-02
Error on TDC Timing (nsec)
Kabes 3 or 4 Pulsewidth (nsec)
χ²/ndf 4.165 / 2
P1 0.3034 ± 0.7654E-01
P2 -0.2717E-01 ± 0.5968E-02
Error on TDC Timing (nsec)
Kabes 5 or 6 Pulsewidth (nsec)

Figure 11

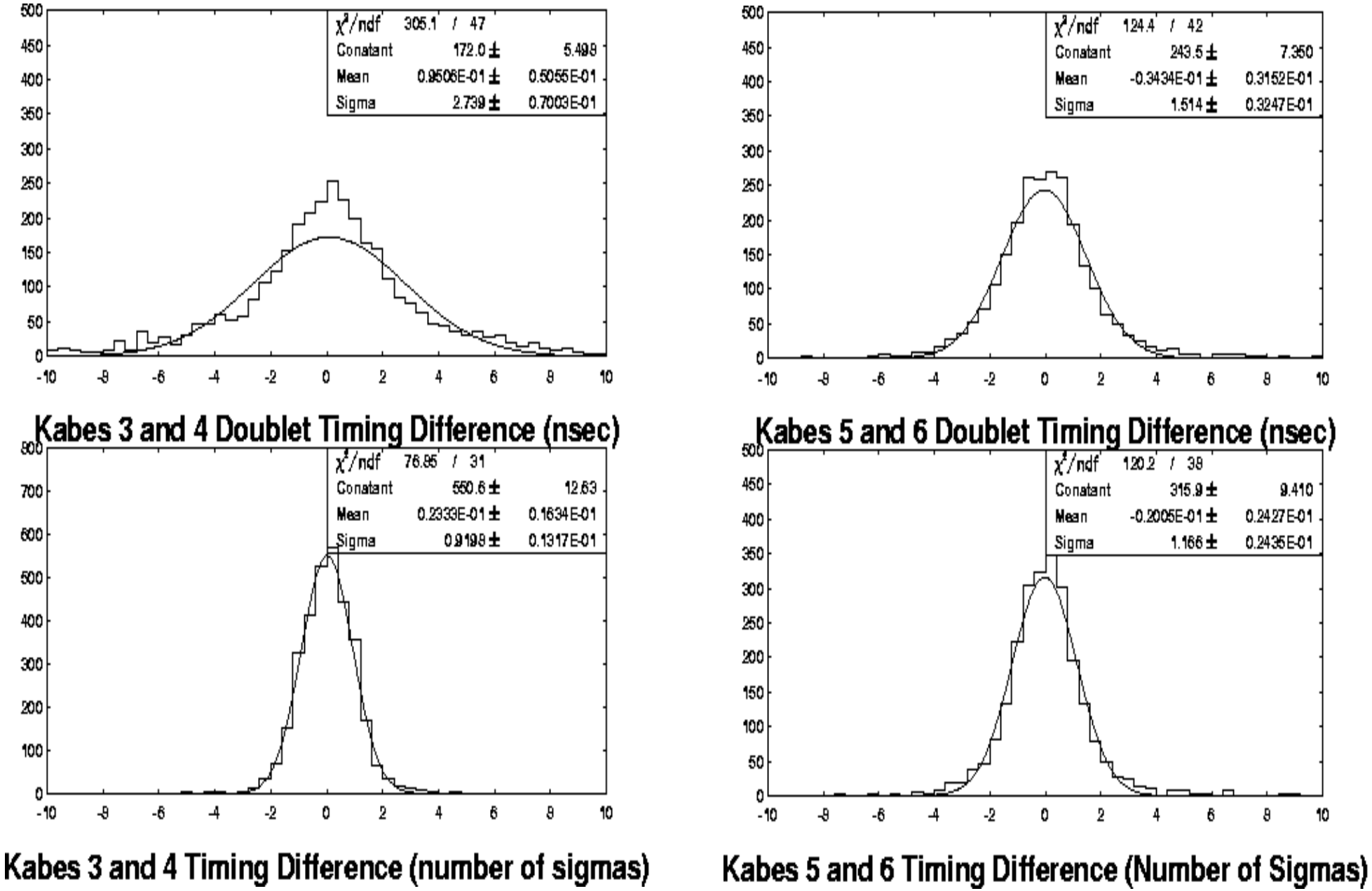


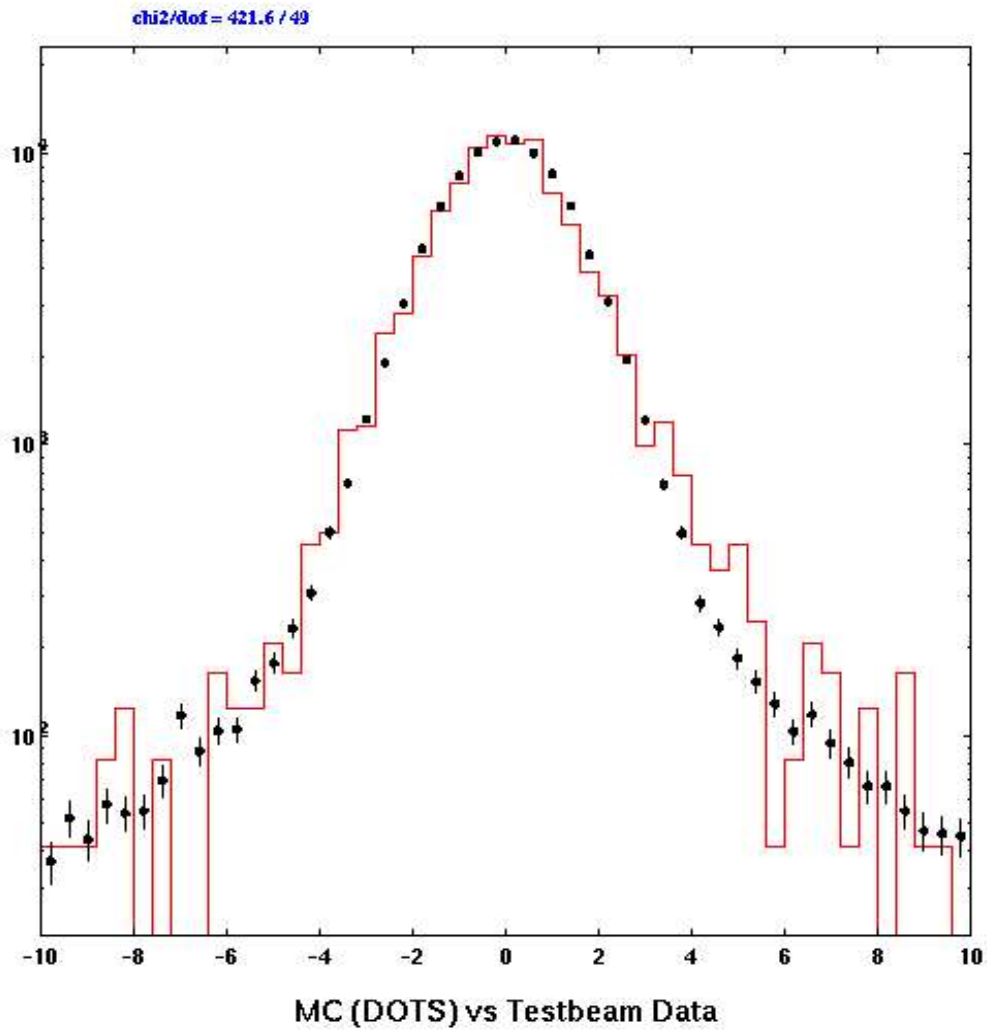
Figure 12: Top shows timing difference between hits in doublets. Bottom shows the quantity normalized to the expected variation.

Simulation of Non-gaussian time Resolution

σ_1 = 0.83 nsec σ_2 = 1.29 nsec σ_3=5.11 nsec

$w_1 = 605\sqrt{\sigma_1}$ $w_2=206\sqrt{\sigma_2}$ $w_3=13\sqrt{\sigma_3}$

Figure 13: Histogram shows the time difference (nsec) between hits in a doublet for Kabes 5 and 6.
The simulation (dots) is the individual hit time resolution parameterized by 3 Gaussian components.



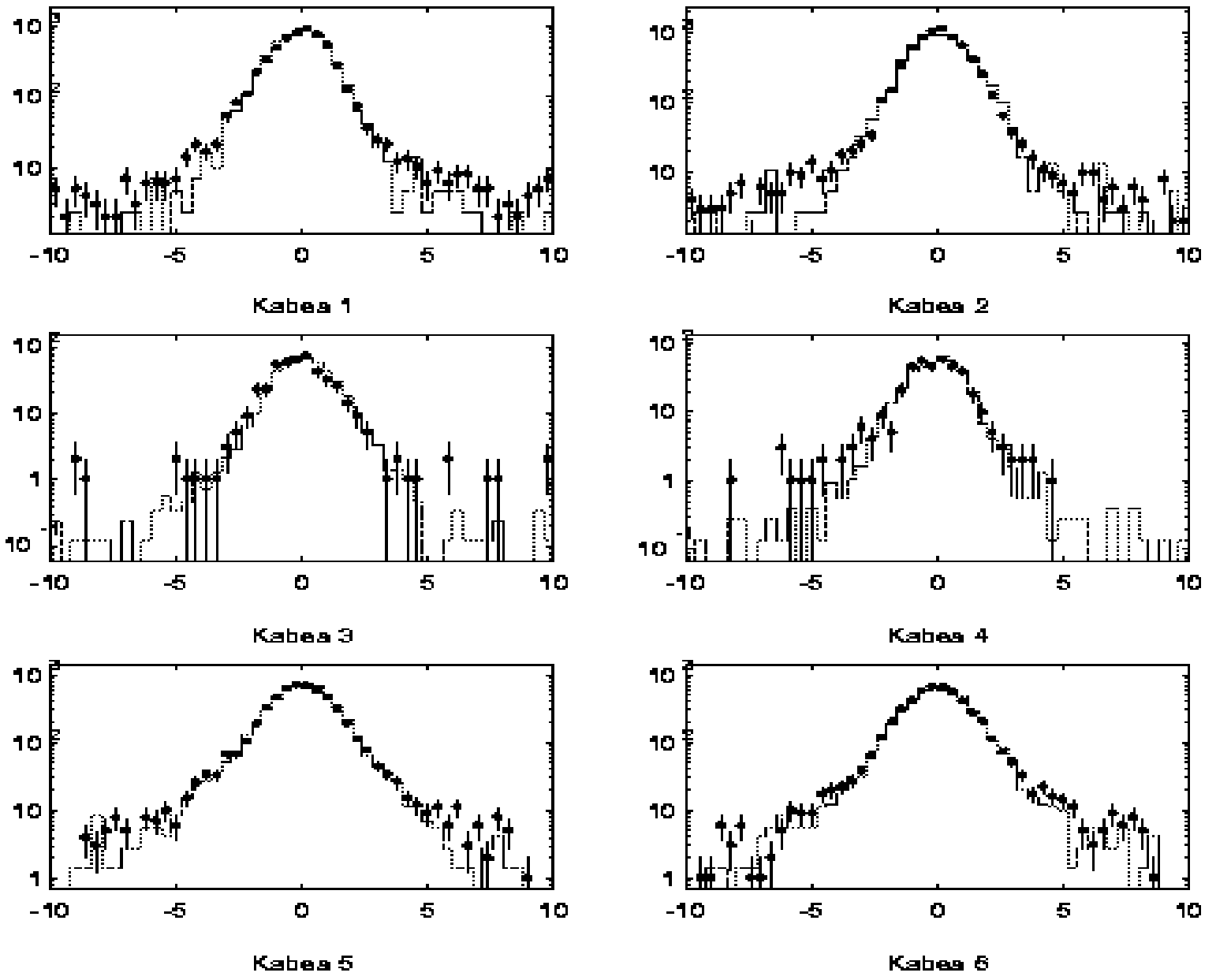


Figure 14: Pull distristributions for doublets. Dots (histrogram) show the quantity for run 16955 (16916).

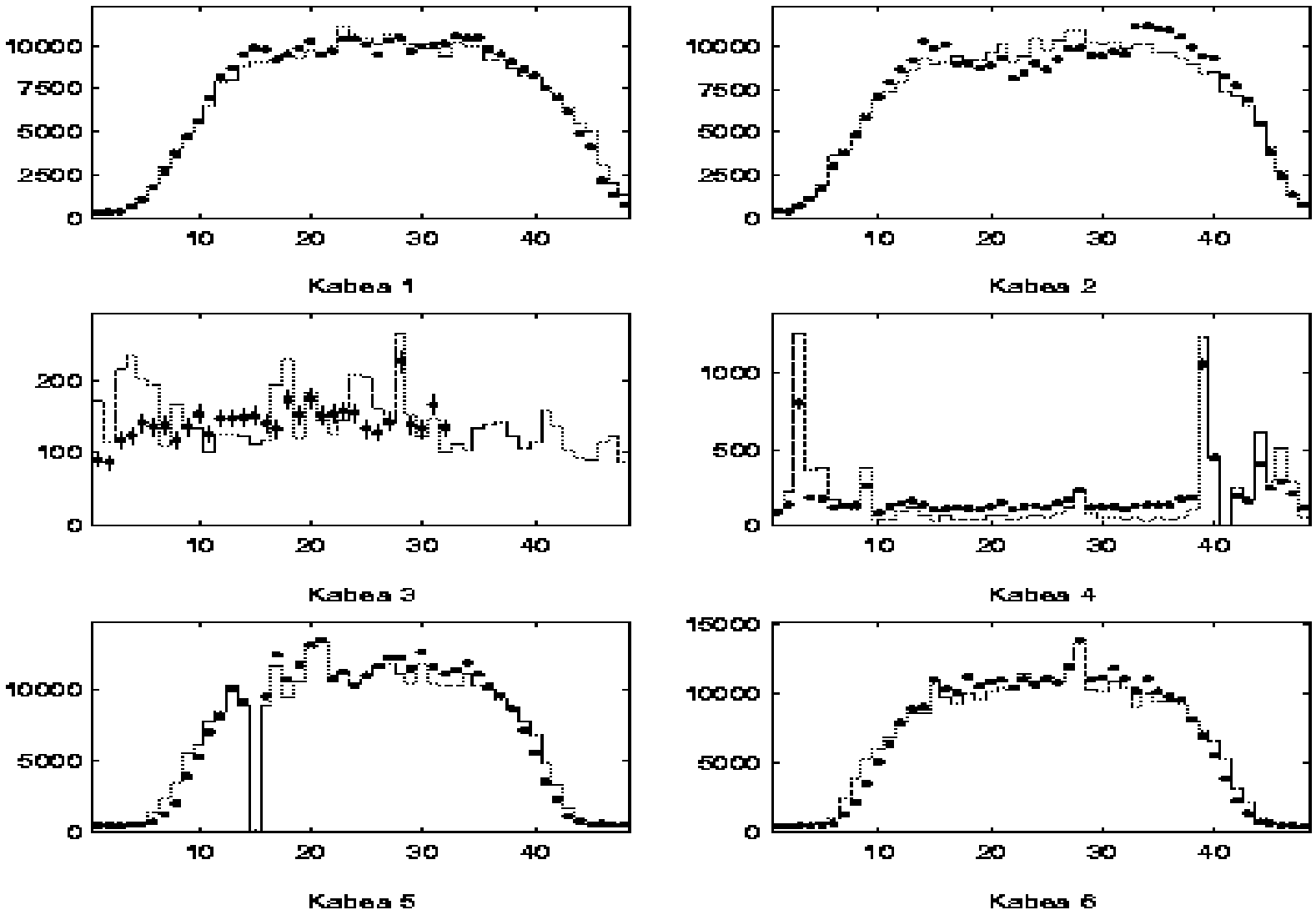


Figure 15: Hit distribution for runs 16959 (dots) and 16951 (histogram). The beam did not go through kabes 3 and 4. Run 16951 was at the nominal NA48/2 intensity. Run 16955 was at 4.2x nominal intensity.