

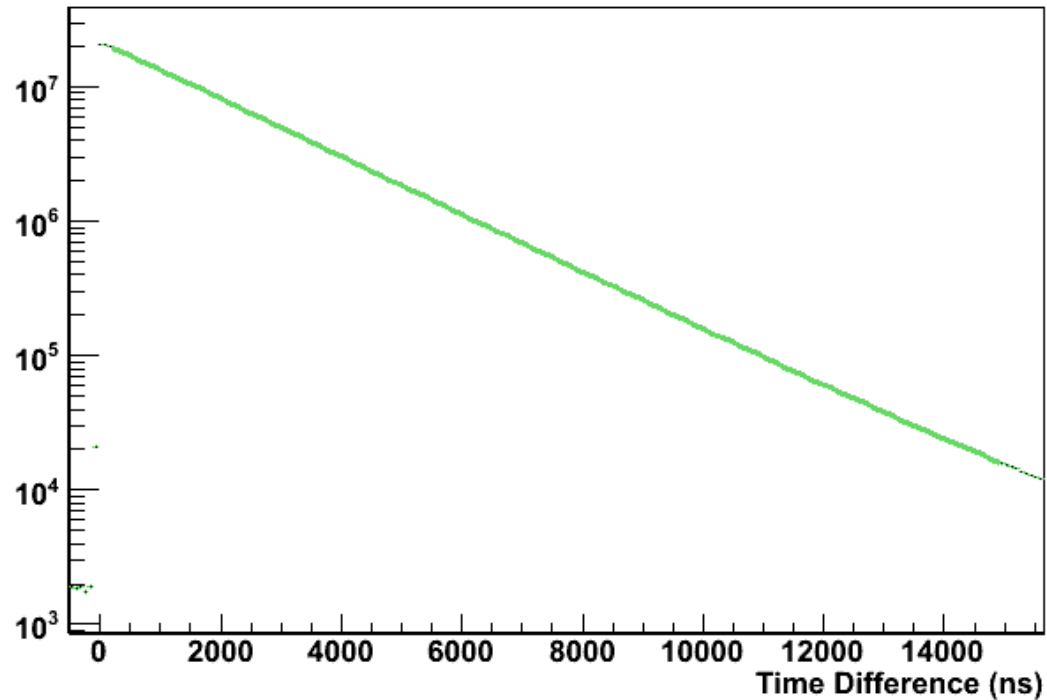
Status of the Ar Electron Time Spectrum Fit

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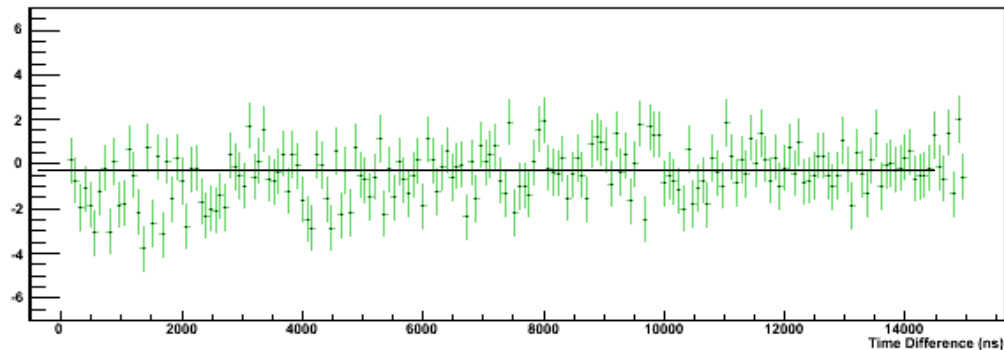
MuX 2/27/2009

Problem: The Pull Histogram Showed A very non-flat shape that made little sense

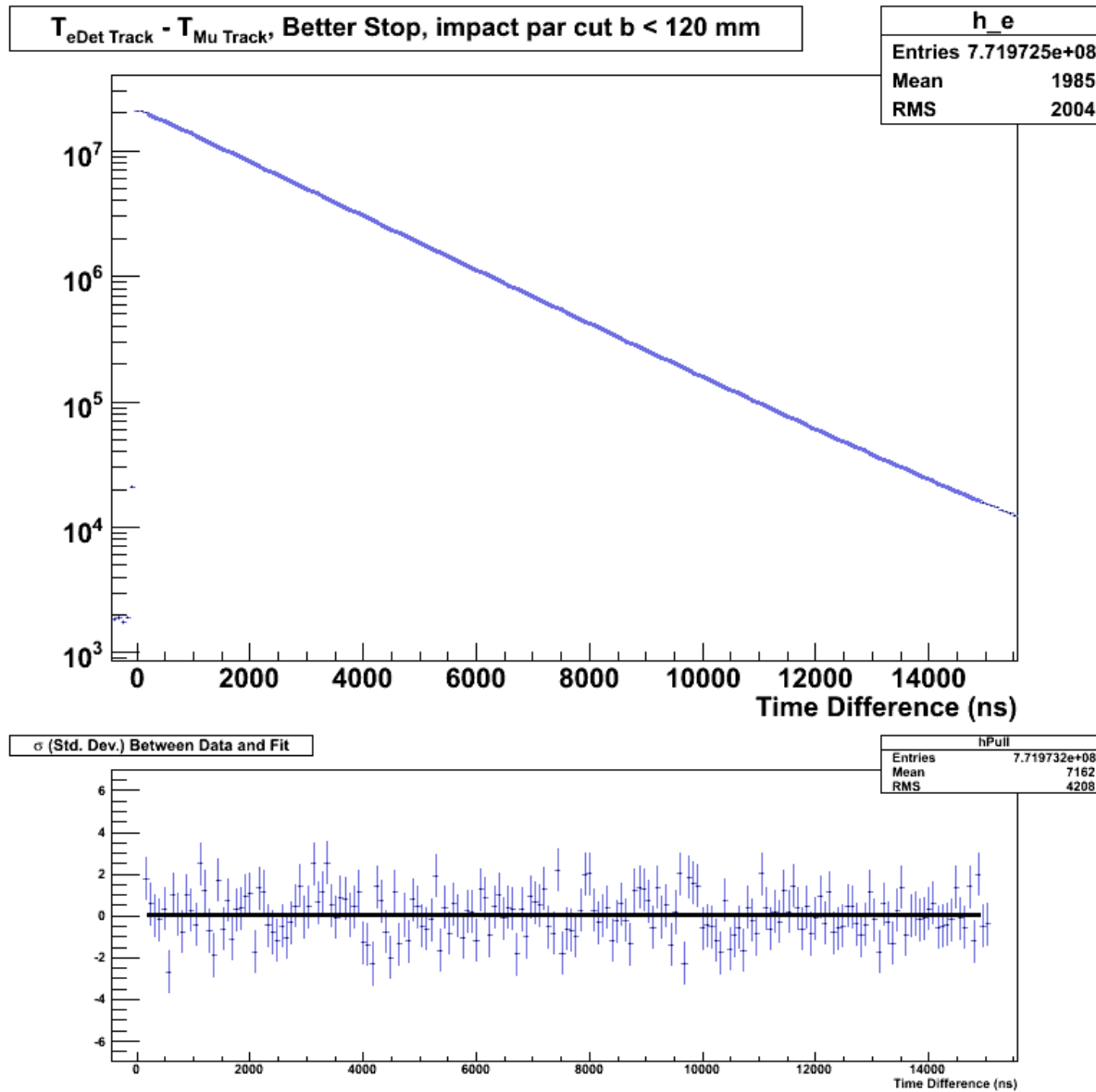
Impact Parameter Cut $b < 120$ mm



σ (Std. Dev.) Between Data and Fit



The Pull Histogram Is Now Flat



1. Background guess is the number of counts at $20\mu\text{s}$
2. 120-15000 ns fit time window
3. "MEI" are options used
4. fit is done three times, RQIN, and "RIN" has been the normal method.
5. STATUS=SUCCESSFUL according to MINOS when M is included
6. Otherwise STATUS=SUCCESSFUL with just "I" fit option as above
7. ERROR MATRIX ACCURATE is also stated in fit results.
8. Changed the pull histogram to allow for deviation of the data to the Integral of the function over the time bin divided by the width of that bin
9. Changed the guess for the amplitude; instead of the integral of the histogram in the fit window, used the number of counts in the first bin
10. $b = 120\text{mm}$ impact parameter condition
 - (a) $\chi^2 = 1.134(105)$
 - (b) Fit probability of 10.3%
 - (c) Fit pull histogram fits to a constant consistent with 0 with $\approx 15\%$ probability.

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11. After a background multiplicity correction has been applied to the Errors of the histogram bins

(a) The fit to the electron time spectrum now has a normalized chi-square of $\chi^2 = 1.126(105)$

(b) The N/B of the histogram is 1460

(c) The error on each bin increases due to a correction of an over-counting of background statistics due to cosmic events

(d) Overall a small effect

12. 120-15000 ns fit time window

13. Fit to the pull histogram with a constant line

(a) the constant c first result is $c = 0.07538 \pm 0.07332$

(b) The Fit to the pull histogram has a normalized $\chi^2 = 1.10$

(c) Fit probability $\approx 15\%$