

Number of $4\text{He}(e,e'pp)$ events at 625 MeV/c

Following Doug's comment, I again checked the number of $e,e'pp$ events with and without tracking. In Fig 1, you can see energy deposit vs momentum in BigBite.

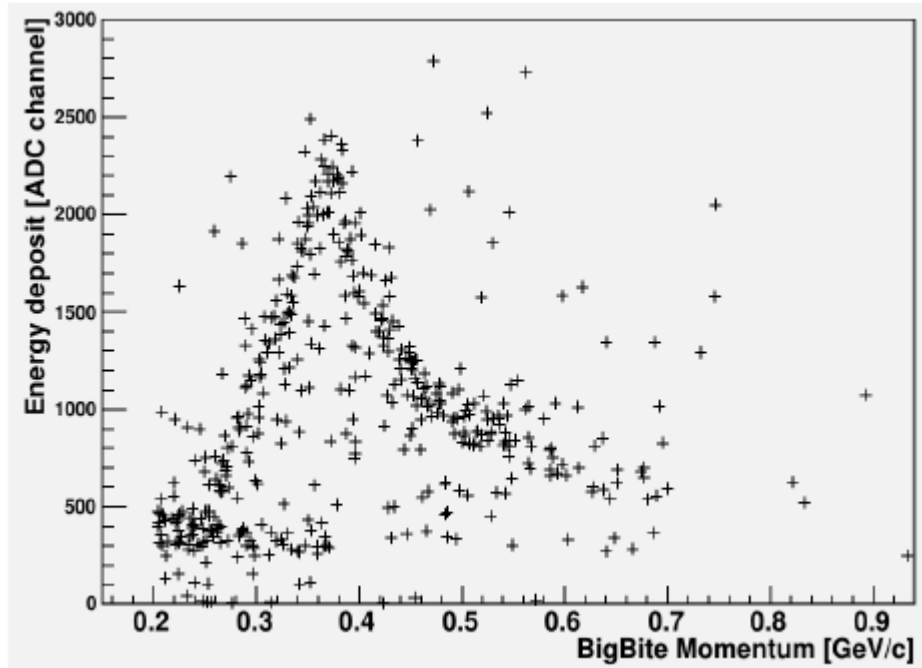


Fig 1:
Energy deposit vs momentum

If we apply a cut on energy deposit, we can eliminate the contribution from minimum MIP. The cut that I used is $\text{ADC} > 500$.

After this cut the number of $e,e'pp$ with tracking 36.7 ± 7 and without tracking 48.5 ± 8.3 .

With the 75 % efficiency the results are consistent.

Number of e,e'pp and e,e'pn events at 500 MeV/c

During this runs, our data divided into 3 sets:

- 1) The reference signal (for BigBite) is non retimed L1A.
- 2) The reference signal is retimed L1A
- 3) Reference signal is retimed L1A **AND** additional cables between BigBite PMTs and amplifiers.

The total charge (based on halog): 1.976C, however it's divided between 3 settings.

- 1) 0.880 C and most of the runs where above 10 uA current
- 2) 0.397 C (5 uA)
- 3) 0.698 C (4 uA)

For HAND all the data is valid and easily extracted. TOF distribution and number of events presented in Fig 2:

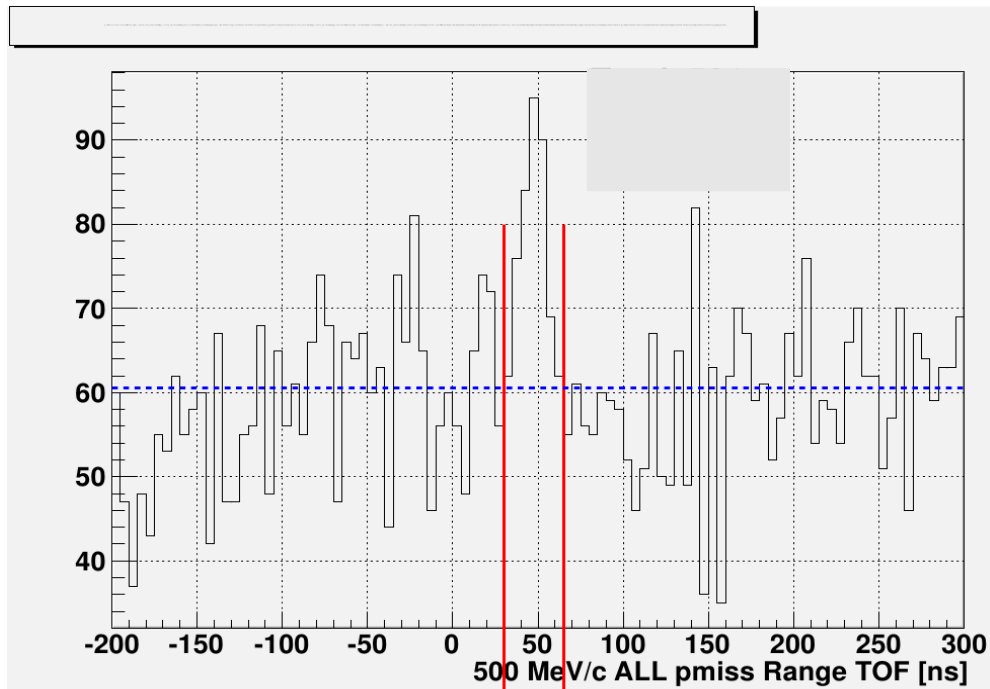


Fig 2: HAND TOF. Assuming flat background between -90 and 200 ns (beyond this values we have cut due to the ADC gate)

But this is not true for BigBite. The data for third configuration can be extracted immediately. In fig 3 we can see the energy deposit vs the momentum for 500 MeV/c (only for the configuration No. 3)

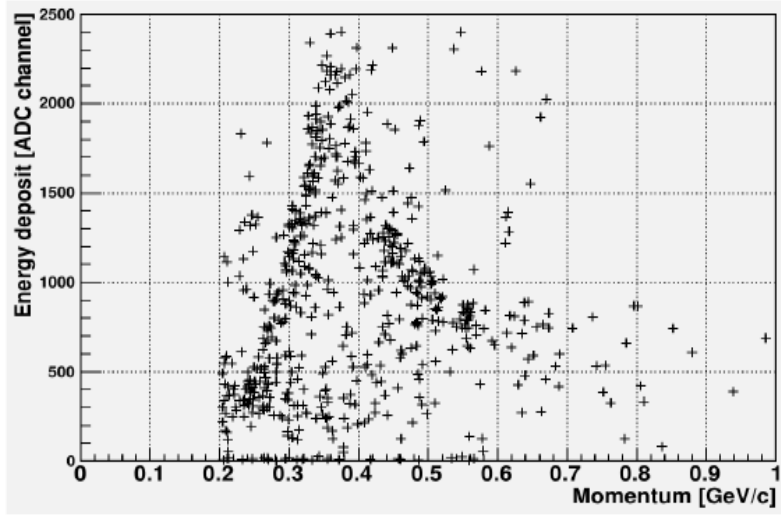


fig 3: Energy deposit vs momentum.

In Fig 4, HAND TOF for third configuration:

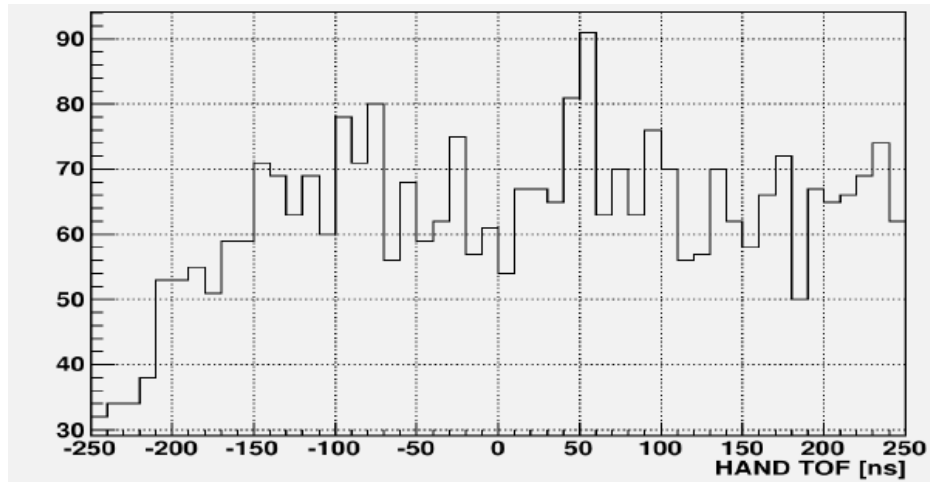


fig 4: HAND TOF

Number of e,e'pn events: 45 ± 16 (with ADC cut >500).

The corrected TOF for BigBite presented in fig 5 and TOF without MWDC in fig 6:

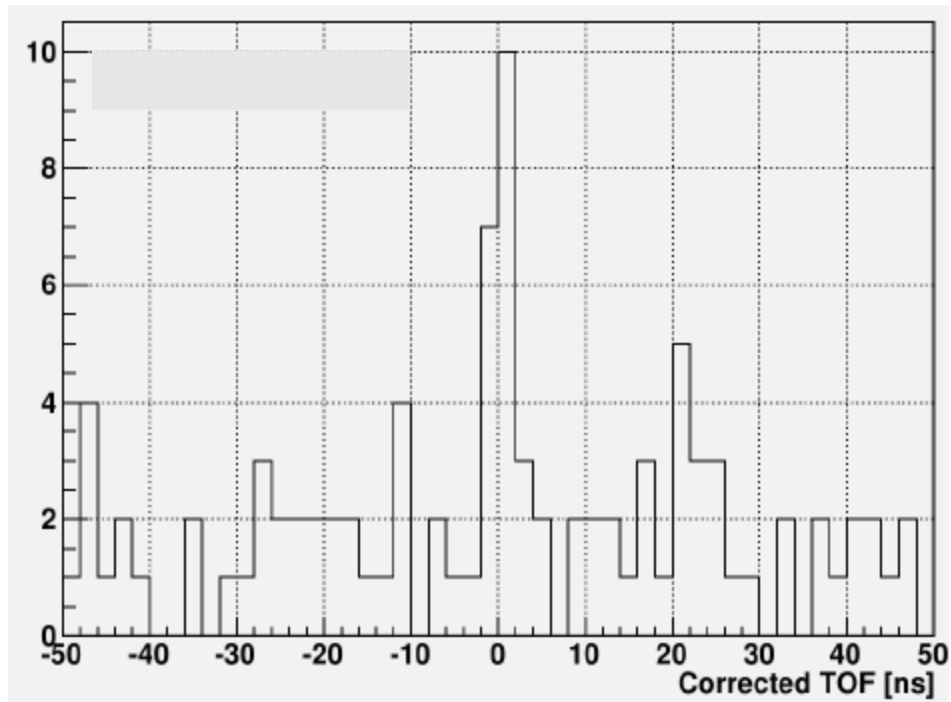


fig 5: Corrected TOF for BigBite

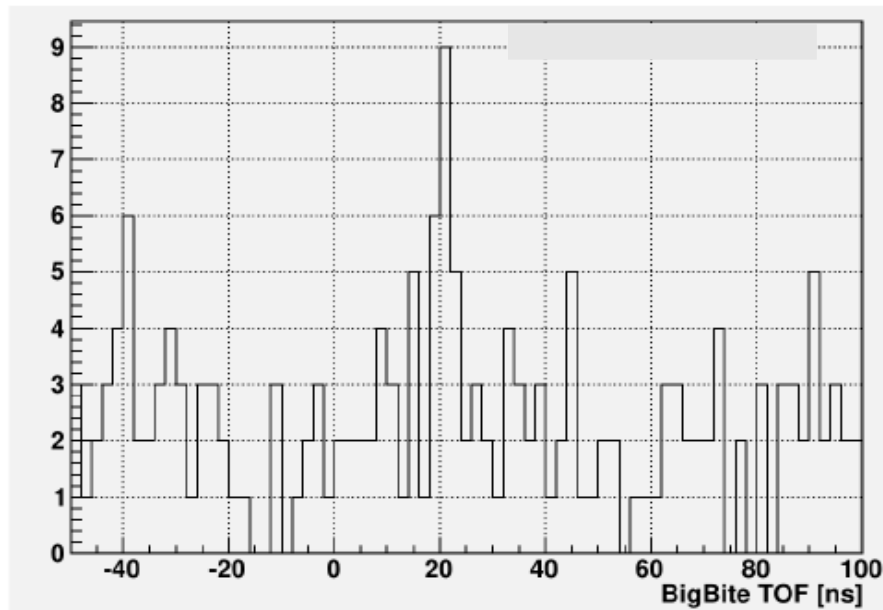


fig 6: BigBite TOF without MWDC

e,e'pp with tracking: 13.9 ± 4.8

e,e'pp without tracking: 16.3 ± 6

These numbers give us the ratio: 7 ± 3.8

The first thing that we can see from the above result is that we are consistent with the ratio from Carbon.

Fig 7, summarize the ratios that we currently have:

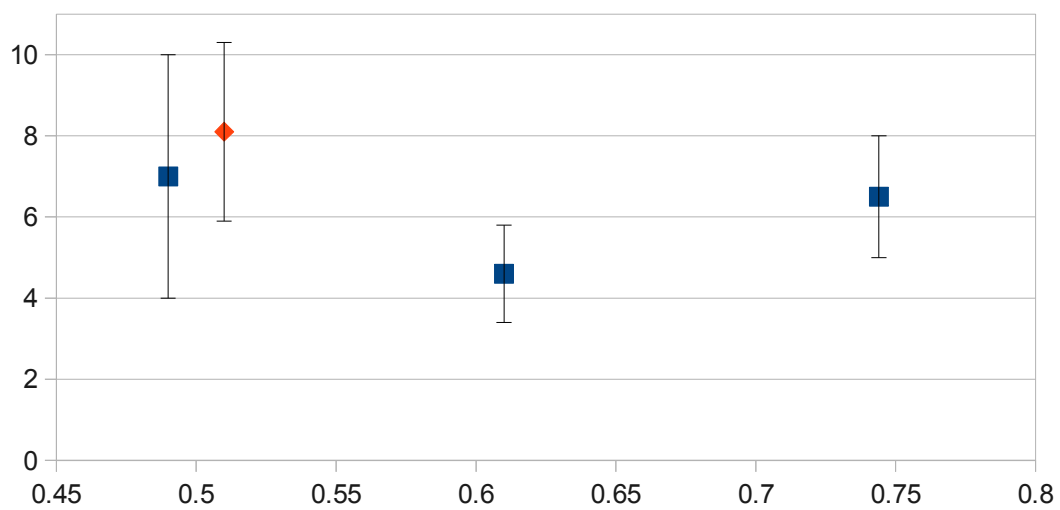


fig 7: ratio $e,e'pn/e,e'pp$ vs missing momentum [GeV/c]