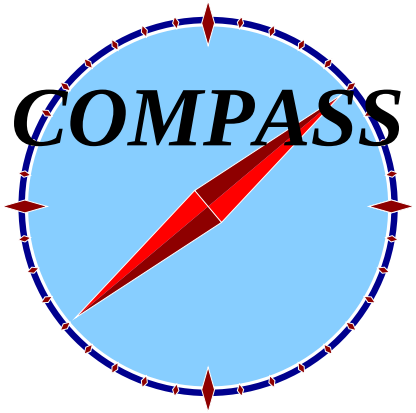
^{6}Li

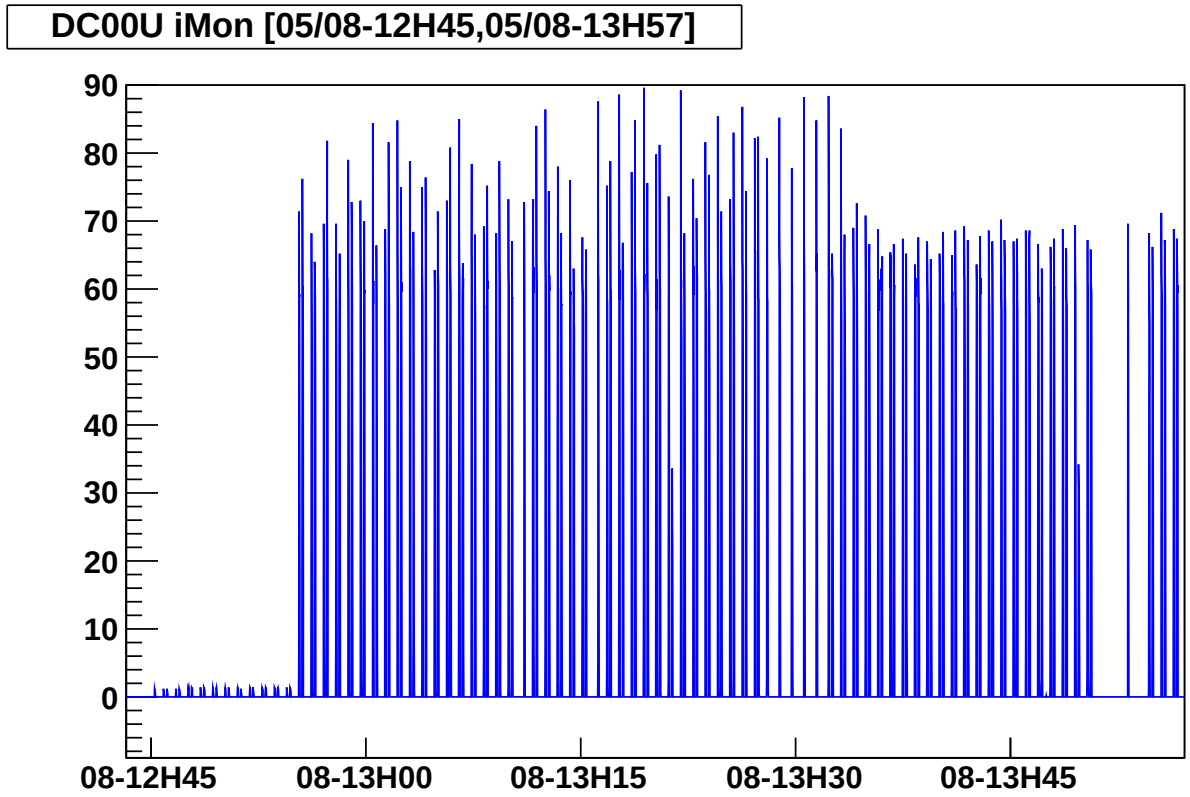
Yann Bedfer
CEA/DPhN

June 5, 2018



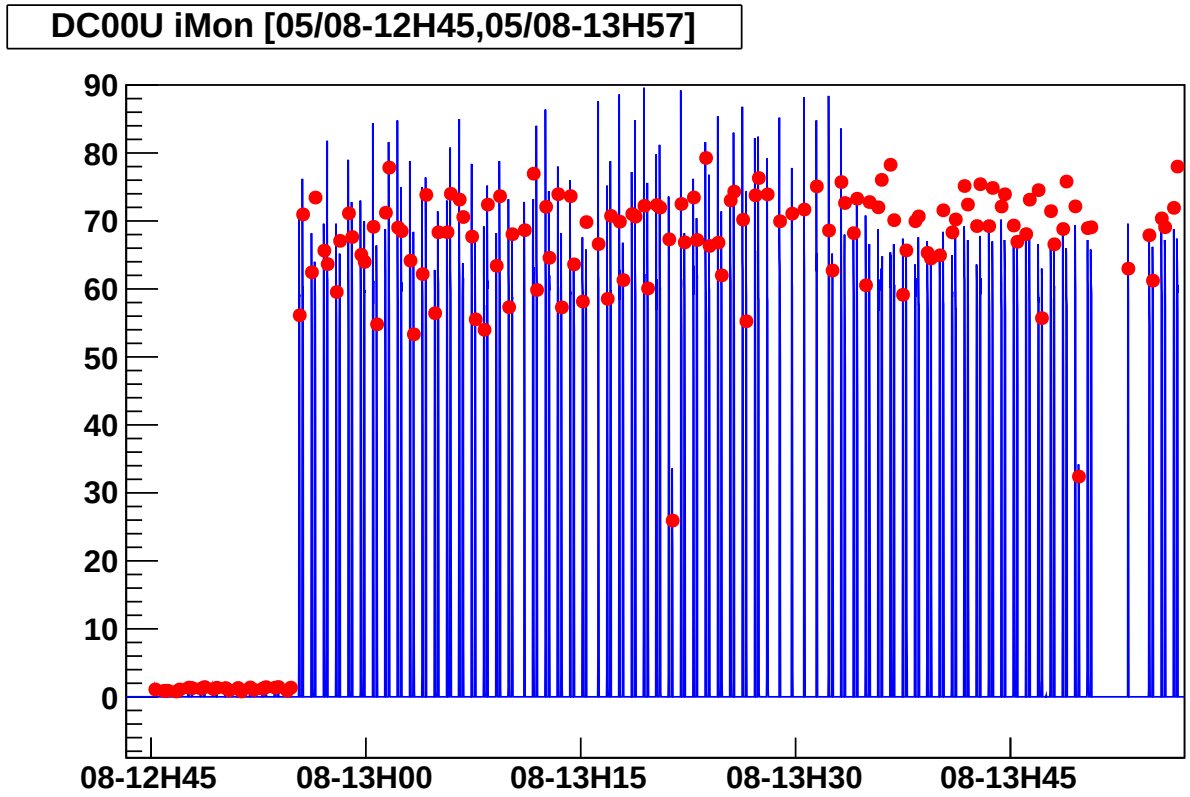
Procedure

1. DCS DB $\rightarrow$ ROOT tree. **Thanks to Christophe.**
2. Add entry w/ 0 value ahead of Spill: approx. 1 s



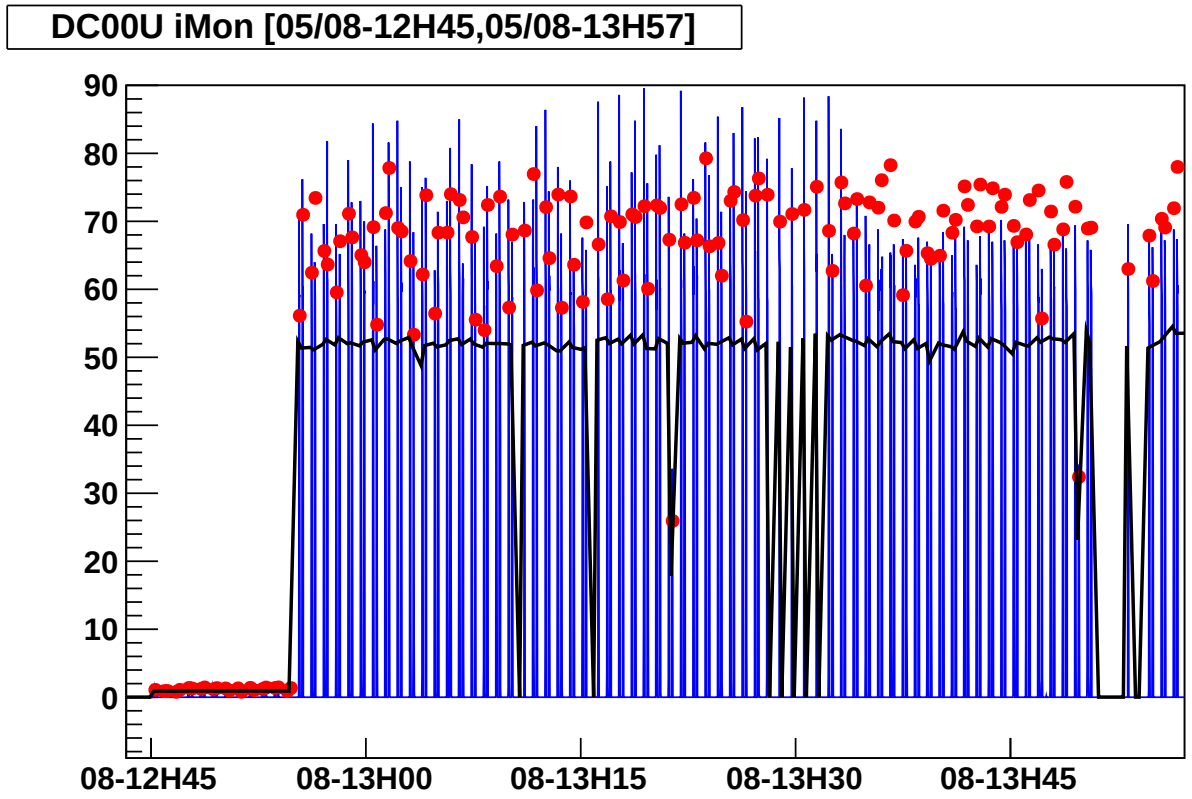
Procedure (*cont'd*)

1. DCS DB → ROOT tree. **Thanks to Christophe.**
2. Add entry w/ 0 value ahead of Spill: approx. 1 s
3. Integrate *per* Spill. And divide by 4. → ΣiMon



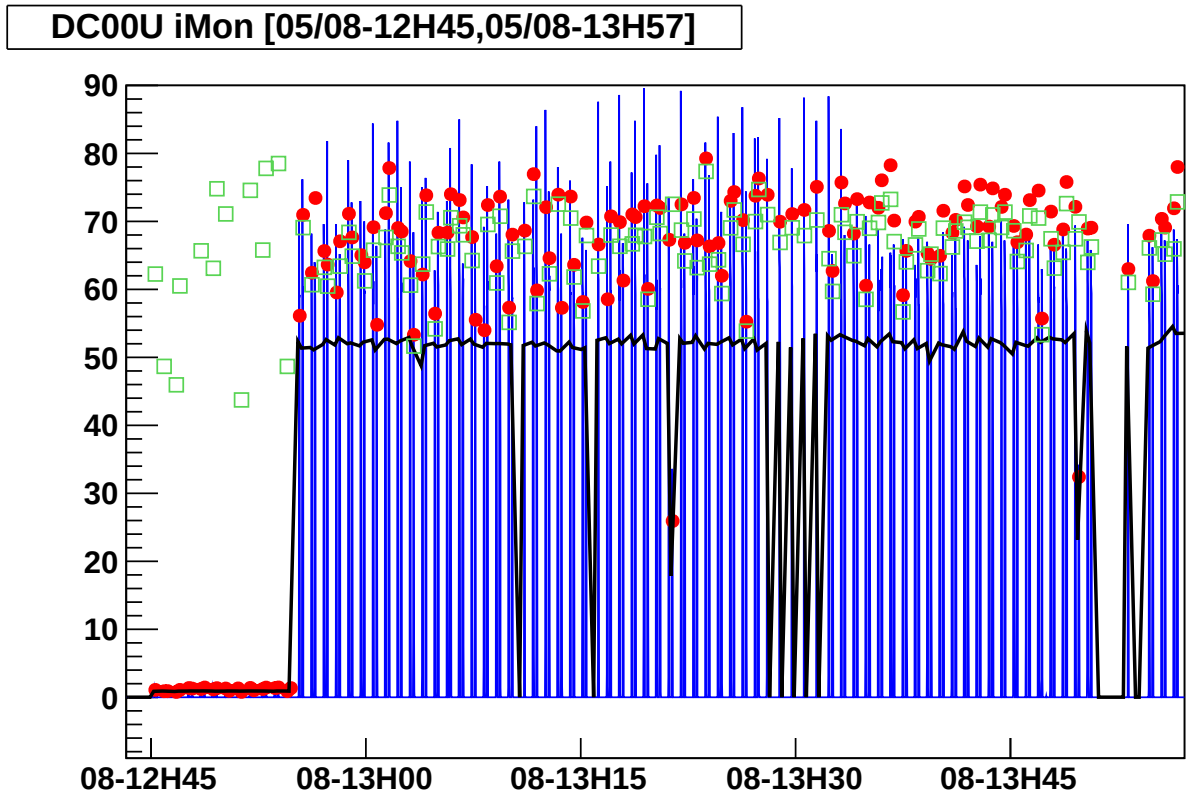
Procedure (*cont'd*)

1. DCS DB → ROOT tree. **Thanks to Christophe.**
2. Add entry w/ 0 value ahead of Spill: approx. 1 s
3. Integrate *per* Spill. And divide by 4. → ΣiMon
4. Ion Chamber 2 (raw). Divided by 1000.



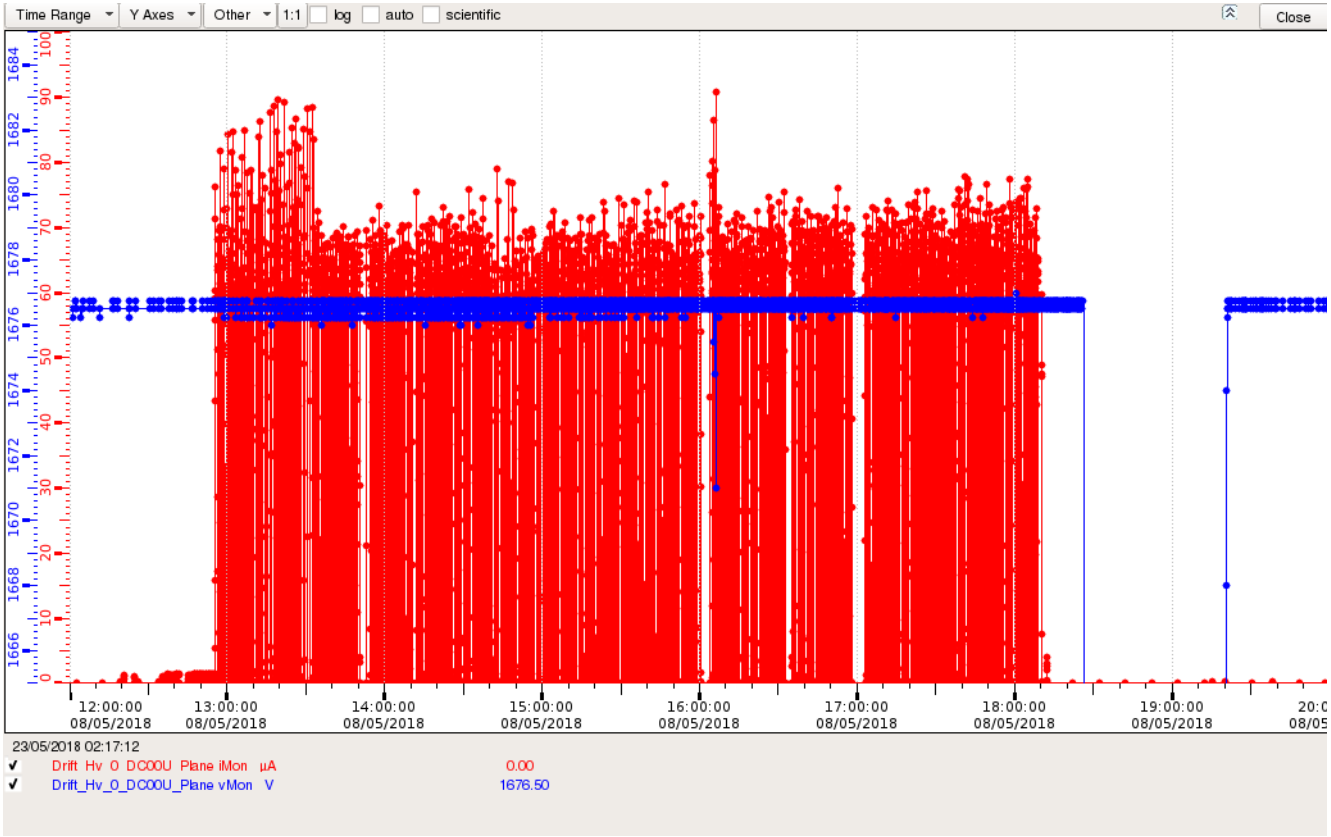
Procedure (*cont'd*)

1. DCS DB → ROOT tree. **Thanks to Christophe.**
2. Add entry w/ 0 value ahead of Spill: approx. 1 s
3. Integrate *per* Spill. And divide by 4. → ΣiMon
4. Ion Chamber 2 (raw). Divided by 1000.
5. Normalise.



No Li period = 05/08/[11H30,18H]

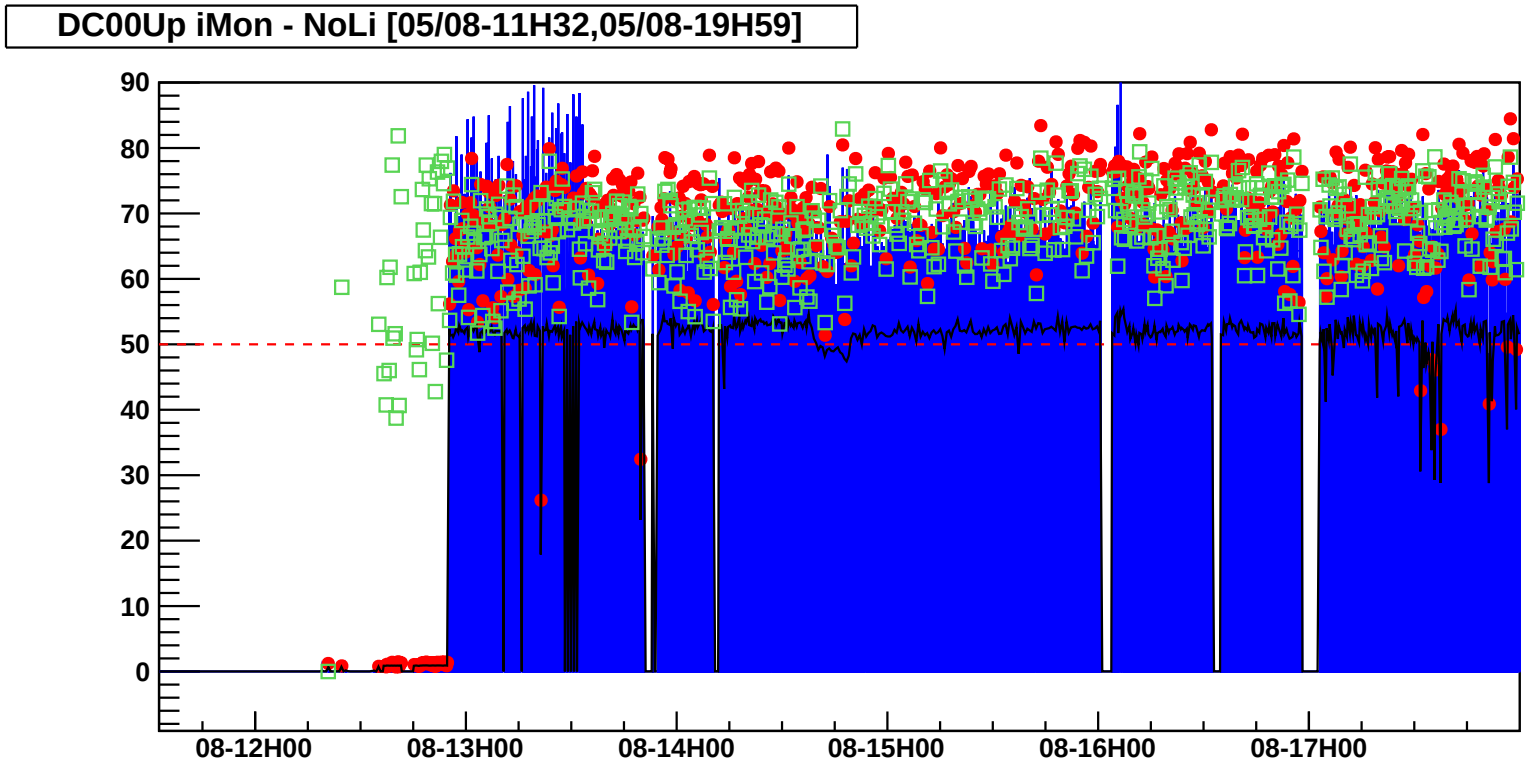
- See Caroline's Weekly Report, page 5 @ WM of 05/11.



DC00U iMon in DCS DB

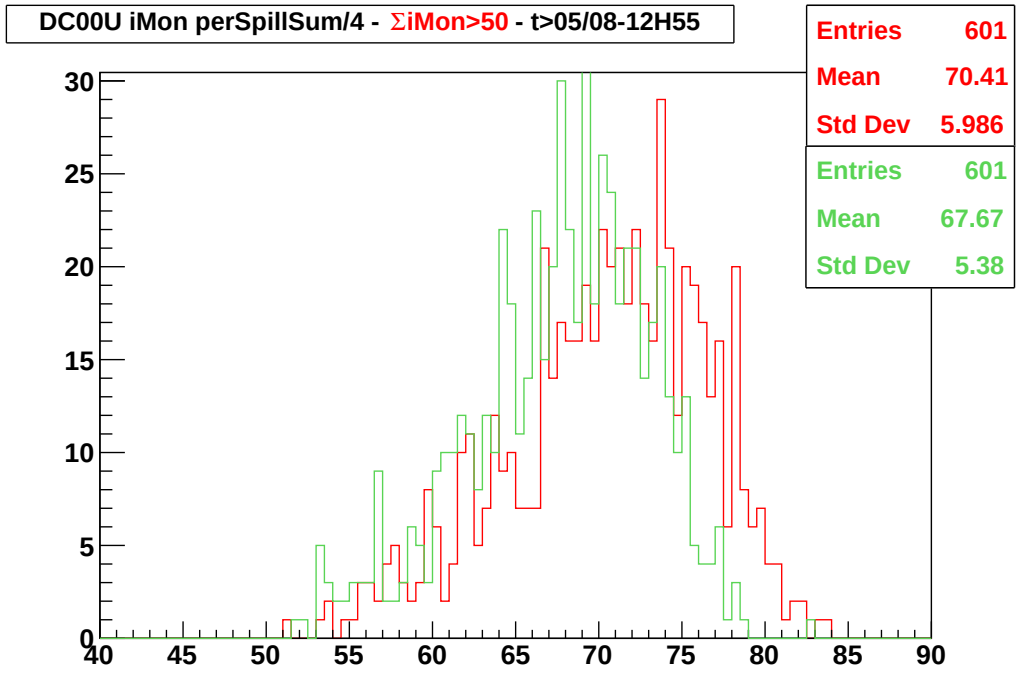
No Li period (*cont'd*)

- DC00U iMon now seen from ROOT



No Li period (*cont'd*)

- Histo DC00U iMon ΣiMon and Normalised

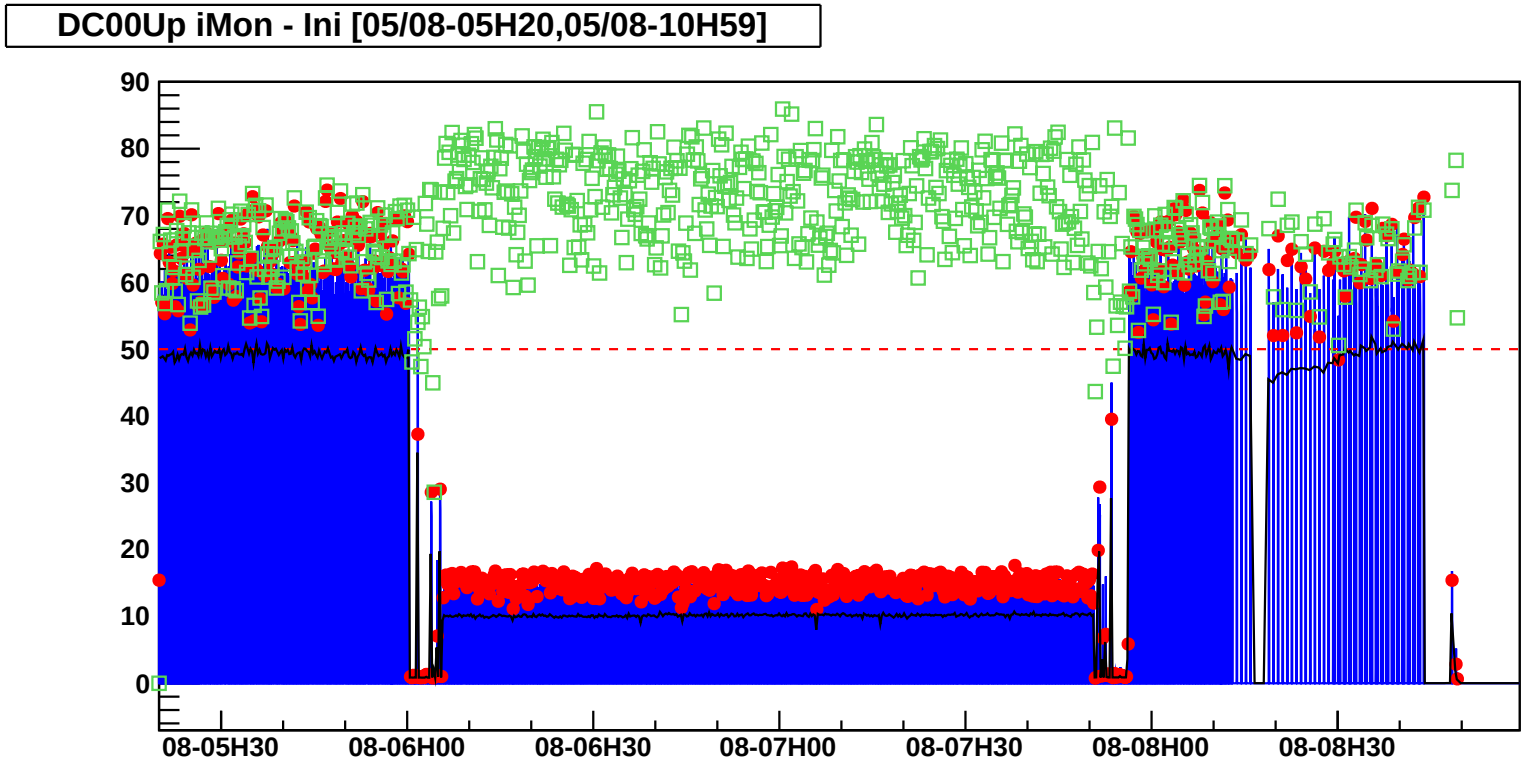


  - Widely spread values, wider than visual impression from Trend Plot
    ⇒ Integral (ΣiMon) may not the best estimator
  - Not much narrower when normalising

(*Note: Histogram shown here is slightly outdated...*)

Initial, w/ Li, period

- DC00U iMon in Initial period, w/ one Li foil.

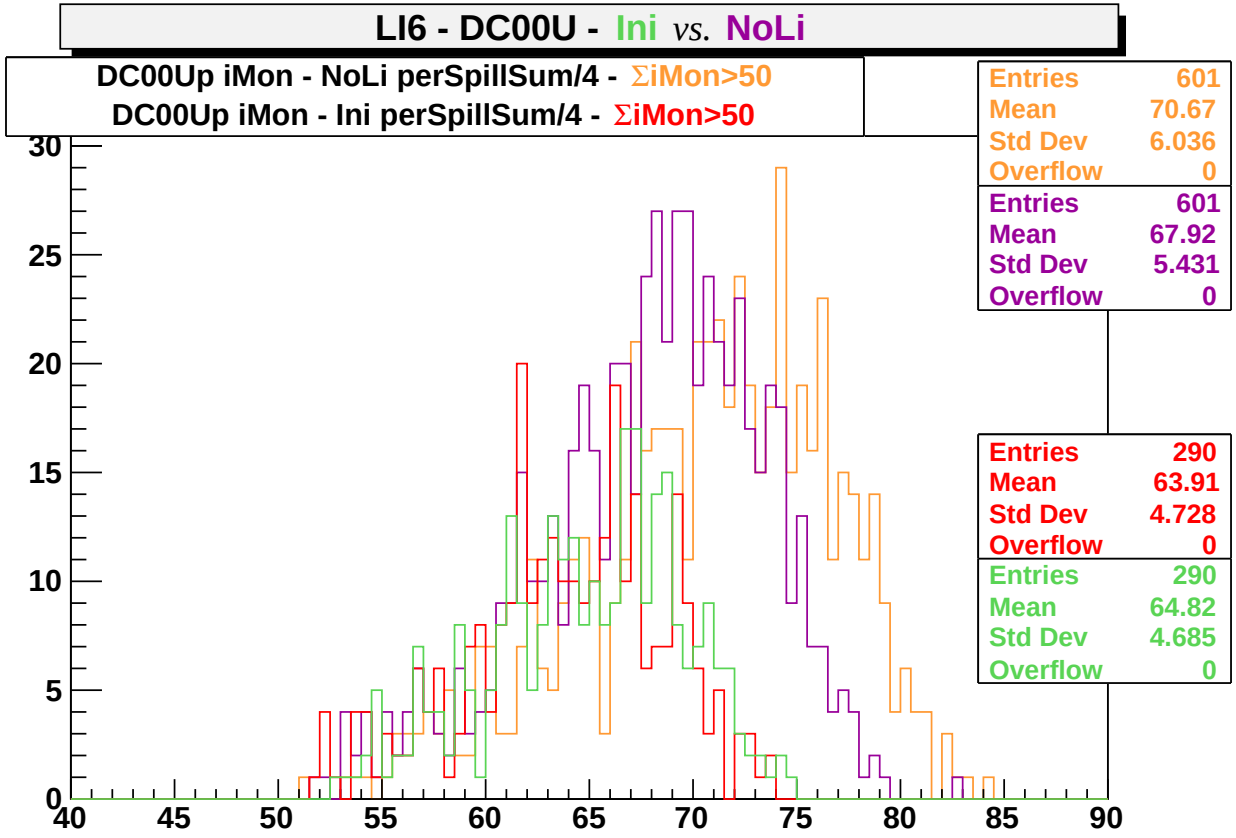


(*Note: At low intensity, [6H00,7H50], current is produced more efficiently...*

...contrary to indication from NoLi @ ∼12H45.)

Initial *vs.* NoLi period

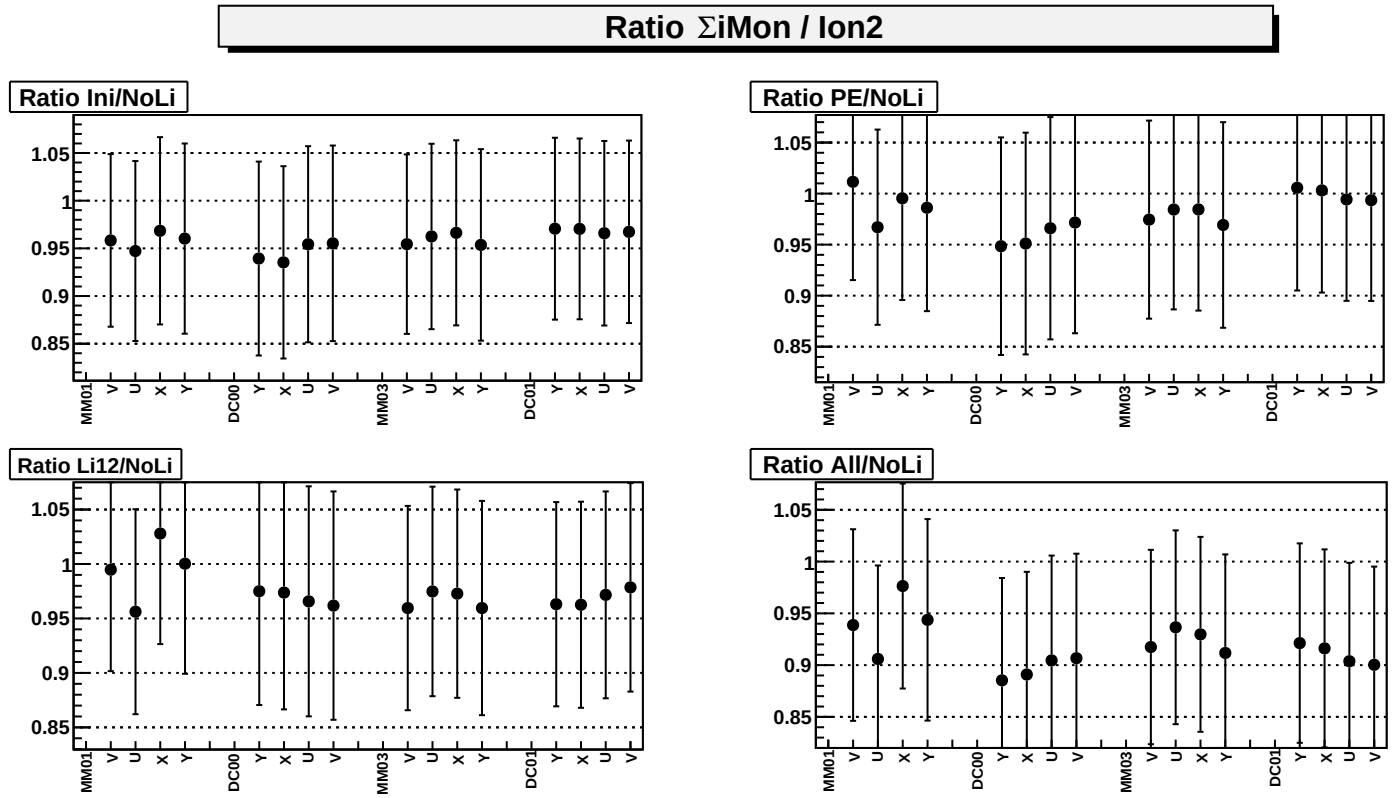
- Histo DC00U iMon ΣiMon and Normalised ($\Sigma iMon$ *and* $Normalised$)



⇒ A 5% effect.

Results

- All 4 config's: Ini(=one Li), PE, Li12, All(=Li×2+PE) *vs.* NoLi, in MPs and DCs.



⇒ 5 to 10% effect.

(*Note: Error bars translate the spread of* $\Sigma iMon$*: no real statistical uncertainties.*)

Results: *Caveats*

1. Solenoid was OFF during NoLi, ON for the rest.
   - Could be that solenoid focuses somewhat incident into DC central dead zone. But. . .
   - . . . Hit profiles: no difference.
   - . . . Dipole *vs.* solenoid, both "All" config.: no difference
   - . . . No measured enhancement in MPs (*which cover DC dead zone*).

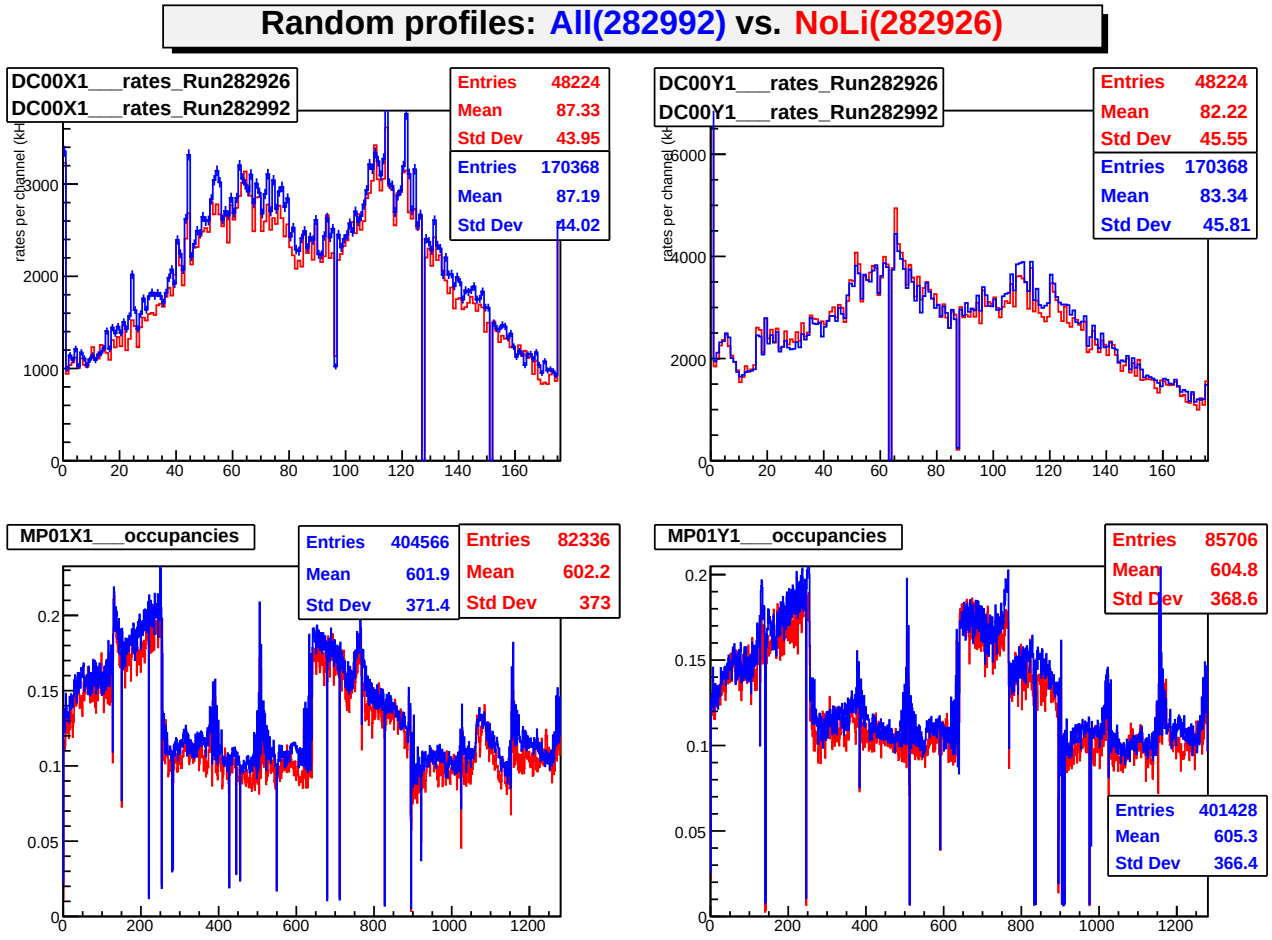
2. Impact of Li is as large on DC01 as on DC00
   - While **naively** expecting particles suppressed by ^{6}Li to be low energy
     swept away by SM1 fringe. But. . .
   - . . . (from Matthias) what's suppressed are γ's, which supply e^+e^- all the way.
   - Then, out of consistency: must be other contribution, sizable, besides γ's:
     leakage of charge particles (putatively).
     Effect of "PE", which does not affect DC01, could be a suppression of it
   - Side consequence: effects should not be explainable in terms of ratios.

3. Two Li layers not better than one: compare "Ini" and "Li12".

   More generally: No additivity

Results: *Caveat* #1: Hit profiles

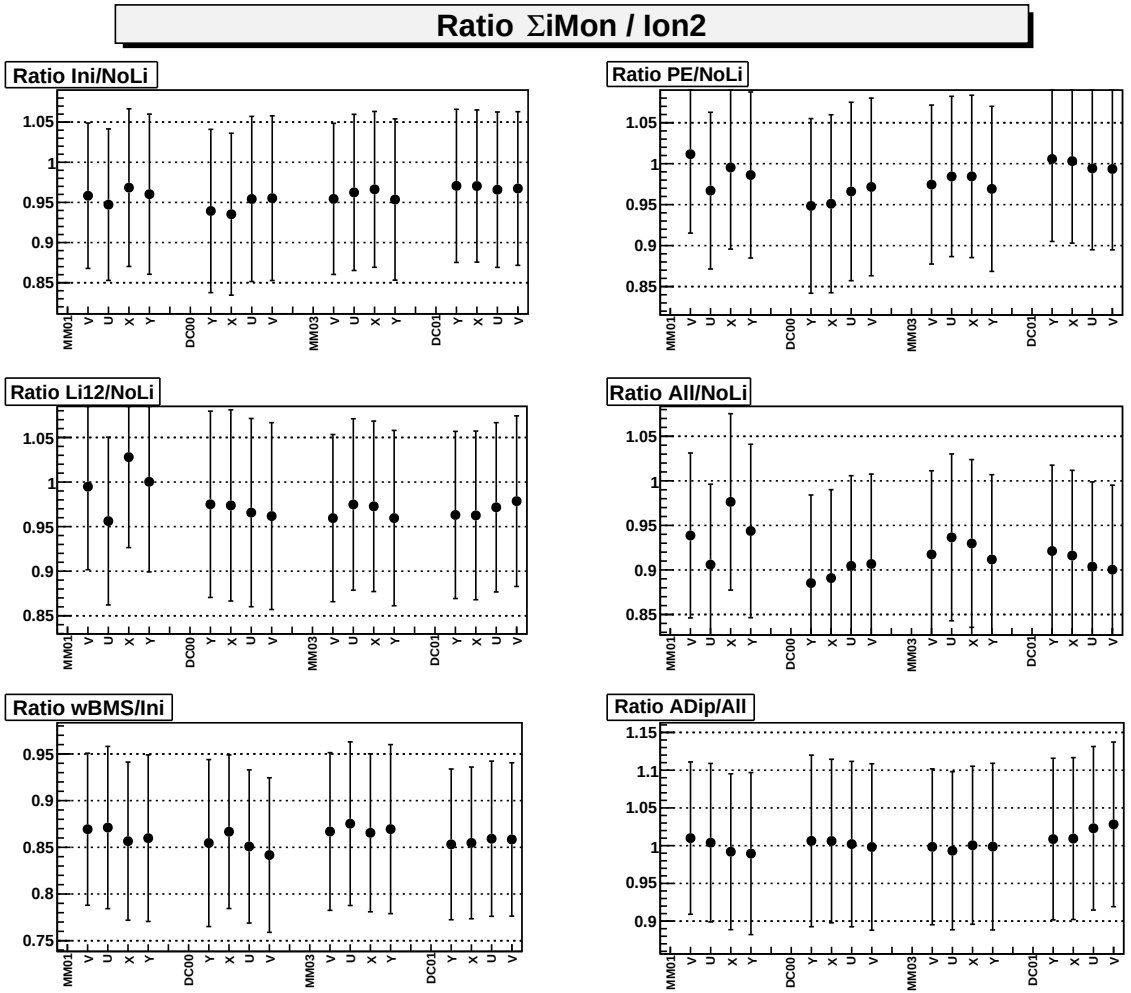
- Hit profiles: All *vs.* NoLi. $\Rightarrow$ No difference.



Results: *Caveat* #1: Dipole *vs.* solenoid

- No impact from target field (*"ADip" is 05/11-[0H00,11H19]*)

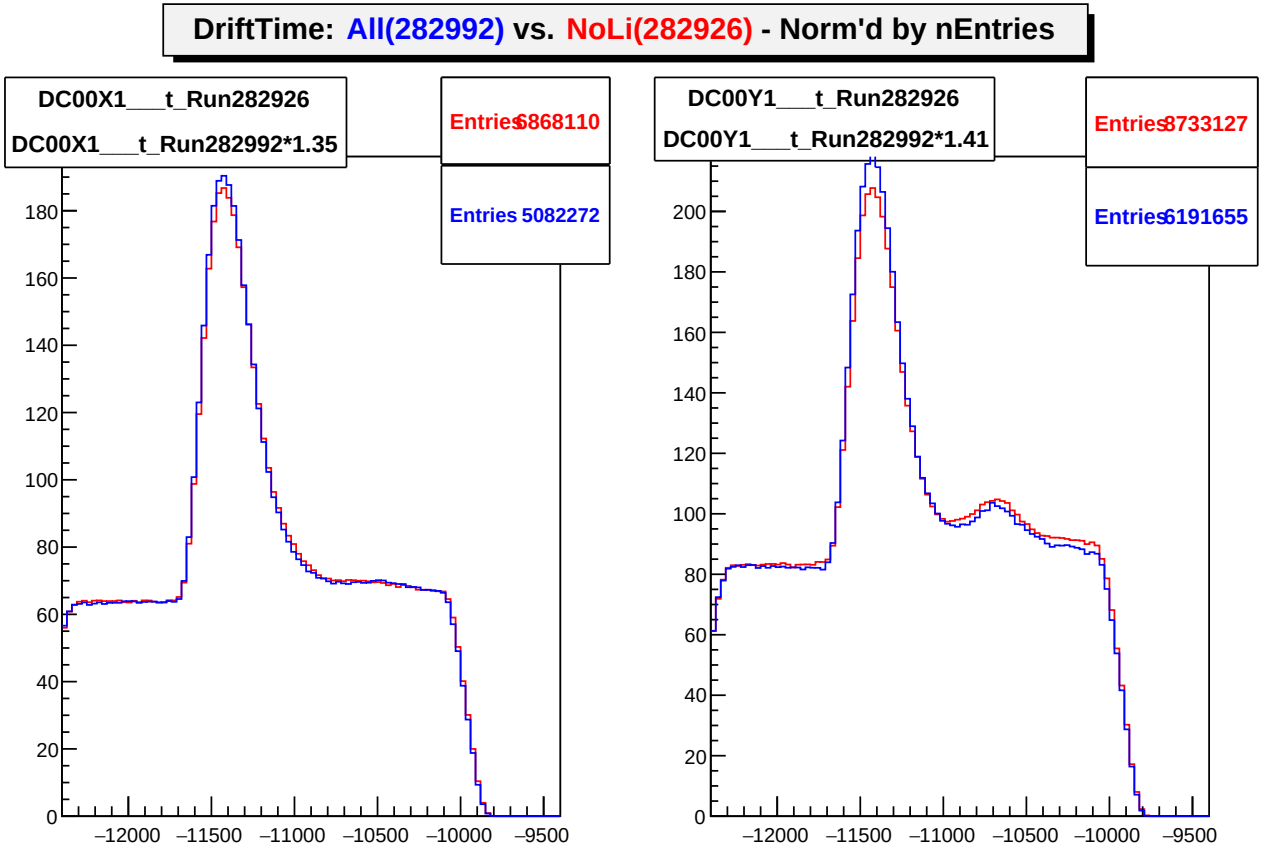
  (*As a comparison is also shown the, large, BMS effect.*)



Results: Signal/Background

- Signal/Background: no difference.

$(Note:\ Event\ ratio = 1.27)$



Conclusions

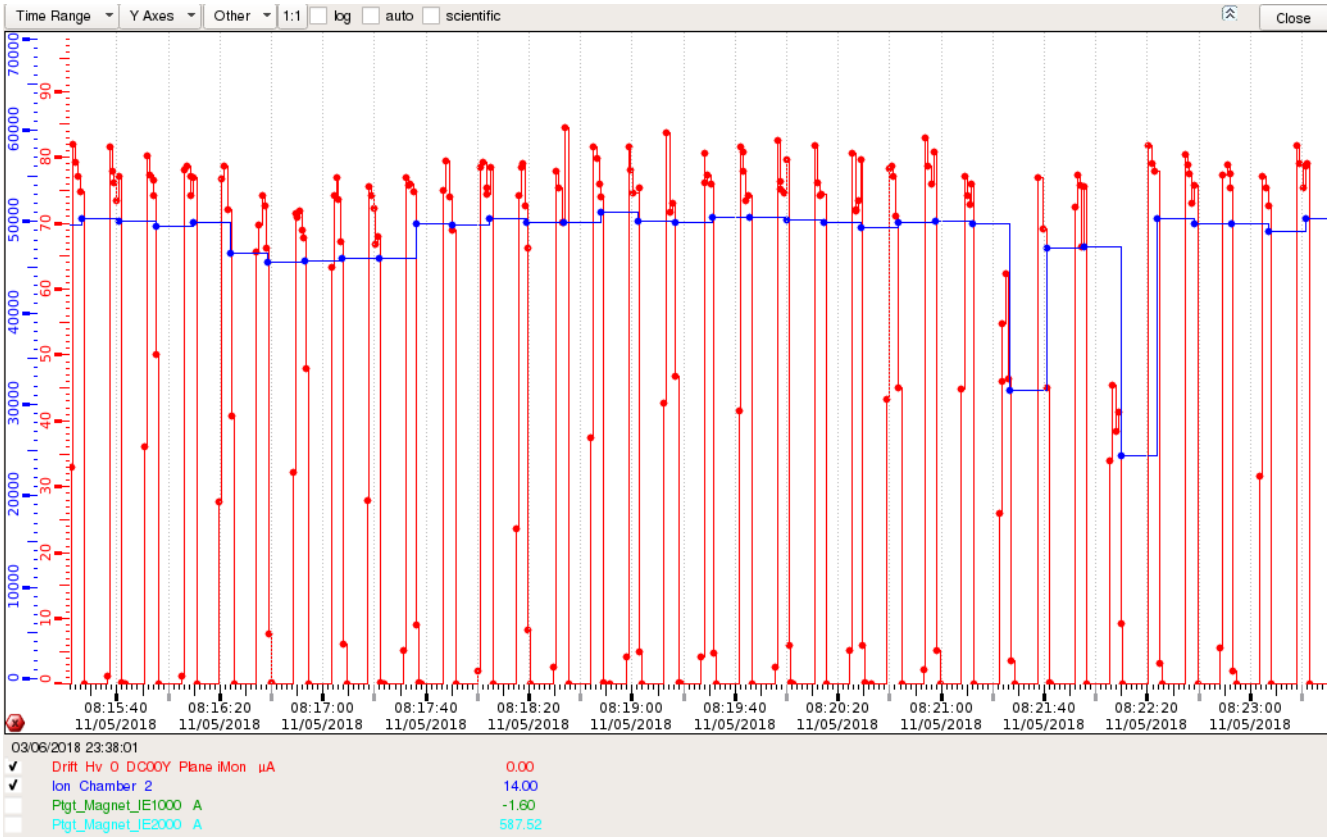
- There is an effect.
- Moderate = 5 to 10 %
- Best config. = ^{6}Li×2+PE

  which happens to be the one eventaully retained!

- No quantitative (*even qualitative, imho*) understanding of individual contributions.

Spares

Ion2 and iMon desynchronisation



Ion2 and iMon desynchronisation