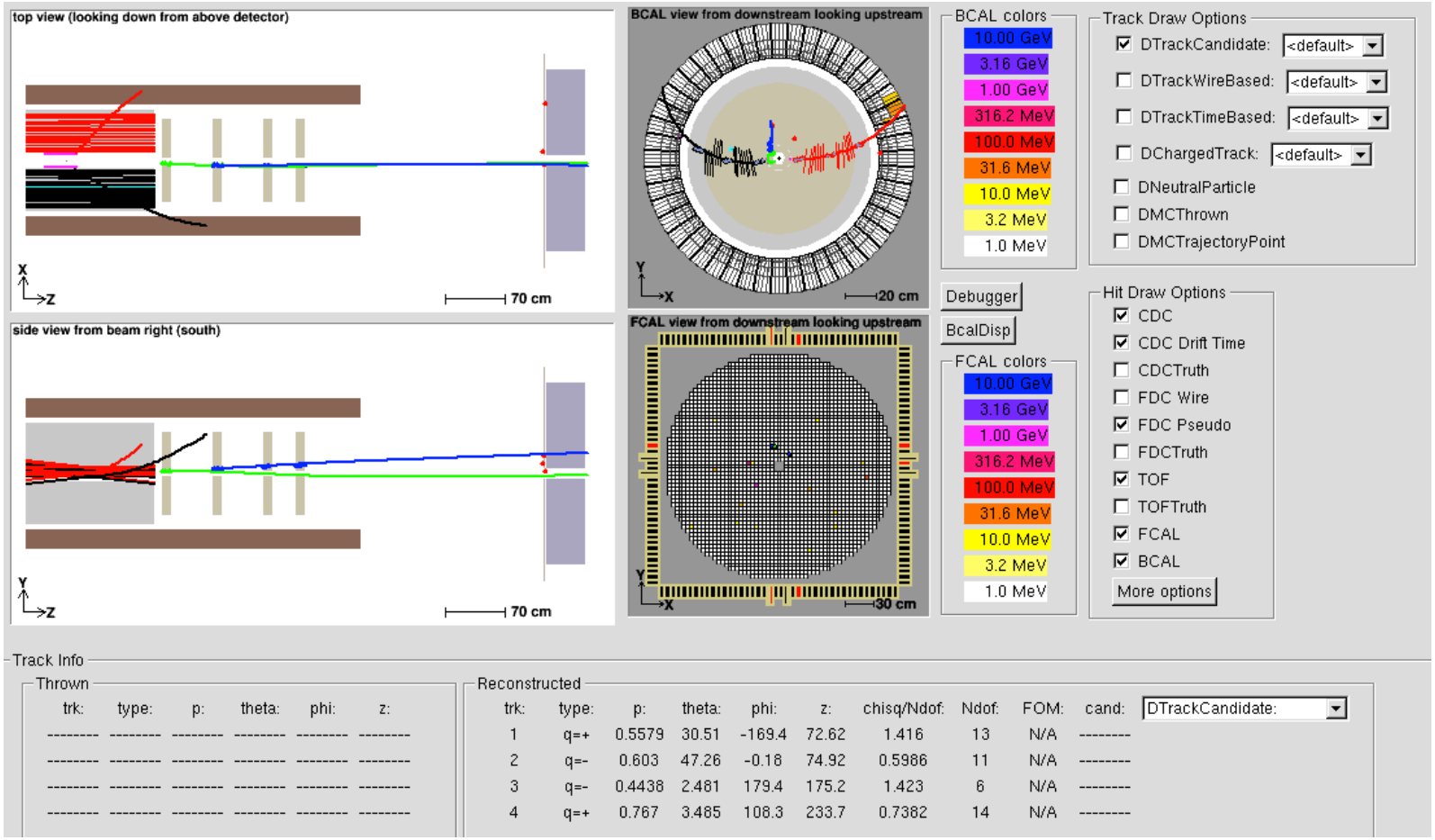
A few CDC updates

M. Staib

Changes to CCDB resolution parameters

In the fcal_bcal_m8 runs time-based tracking appeared to be not working in the CDC (it is likely the case for many more of the runs, but these were the ones I looked at)
Here is a good example:

Track Candidate stage



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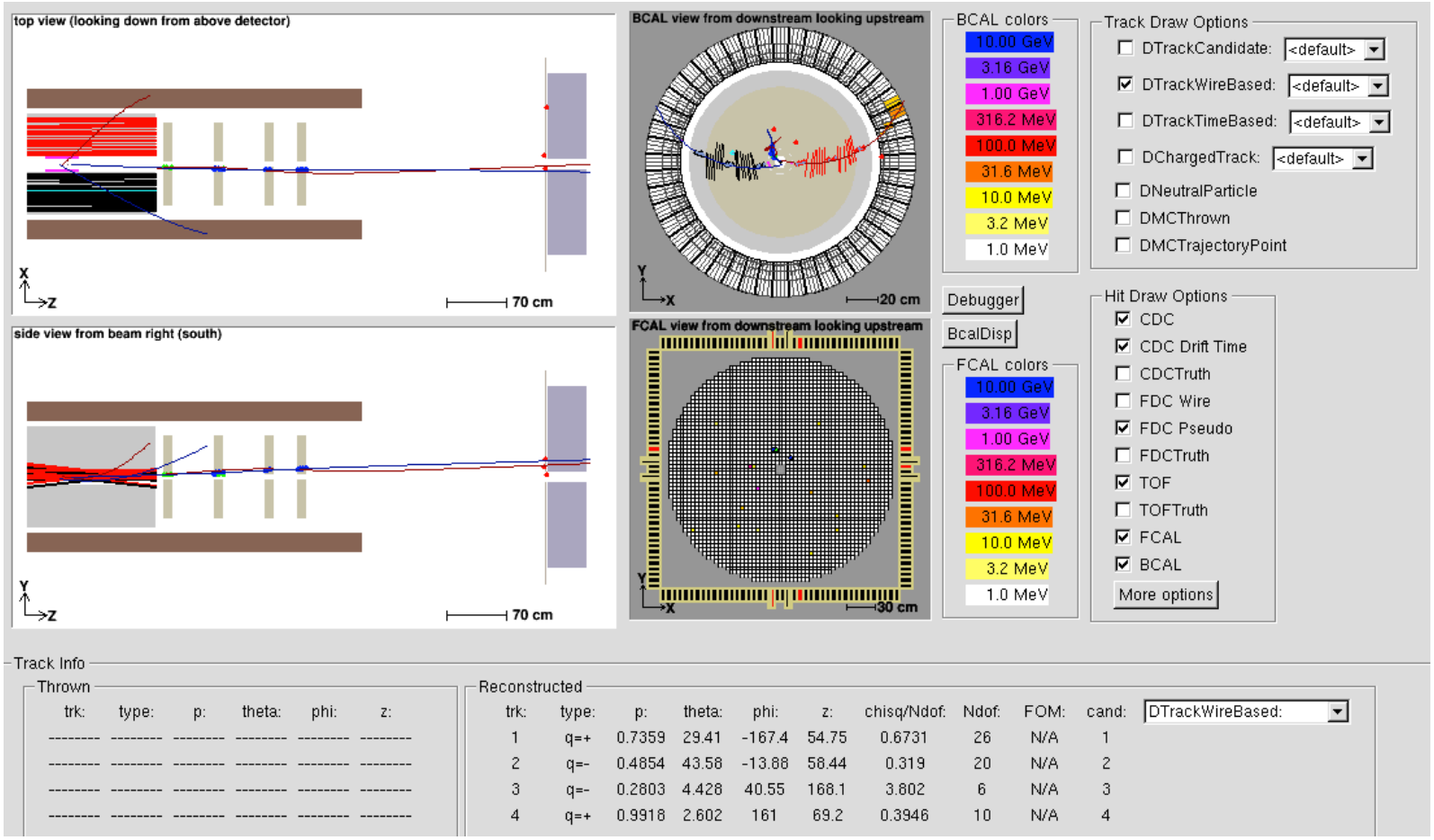

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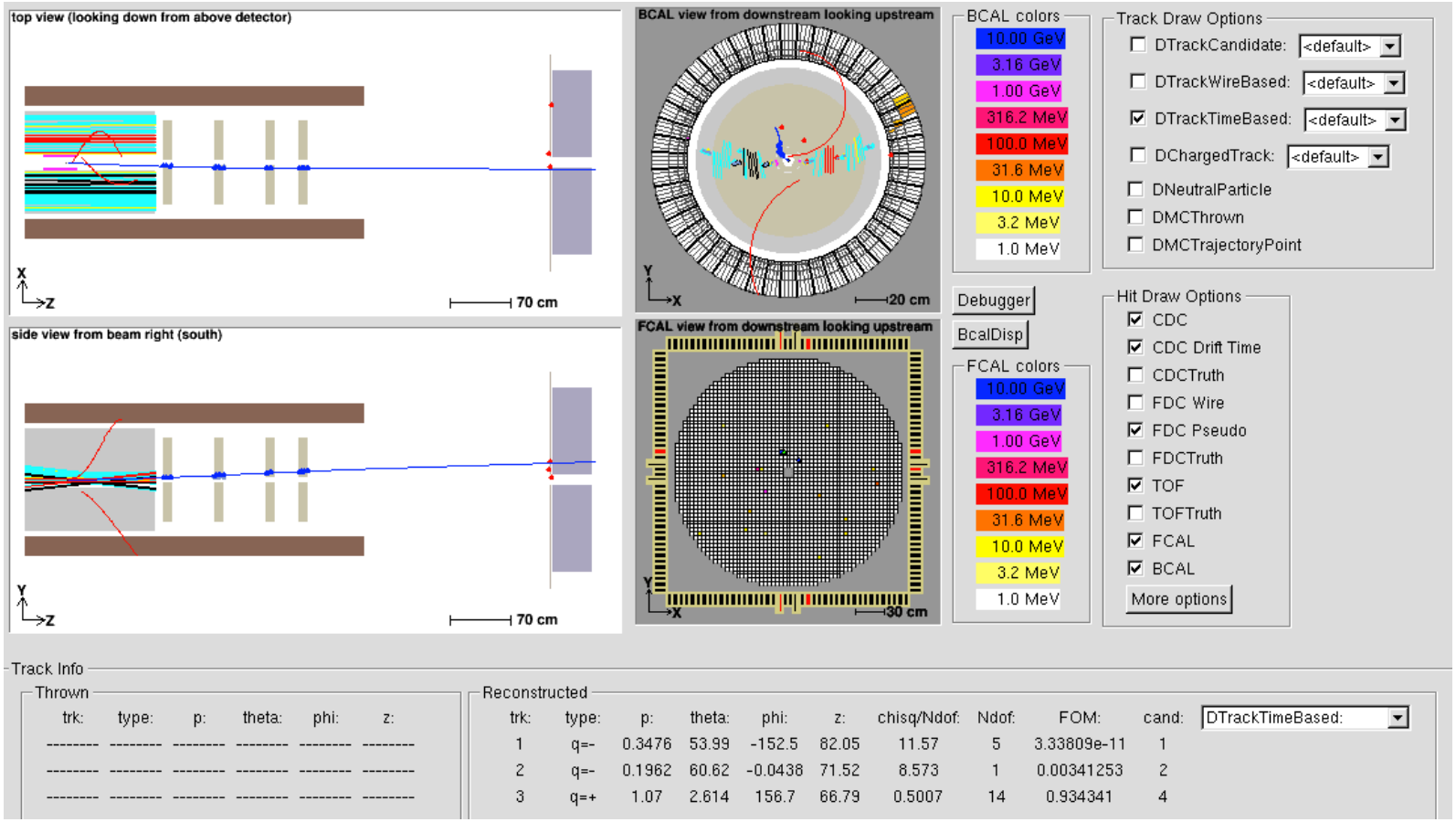


Changes to CCDB resolution parameters

After talking with Simon, we both concluded that it could be traced back to the way the errors are being estimated for the CDC. The resolution as a function of the drift time is modeled as:

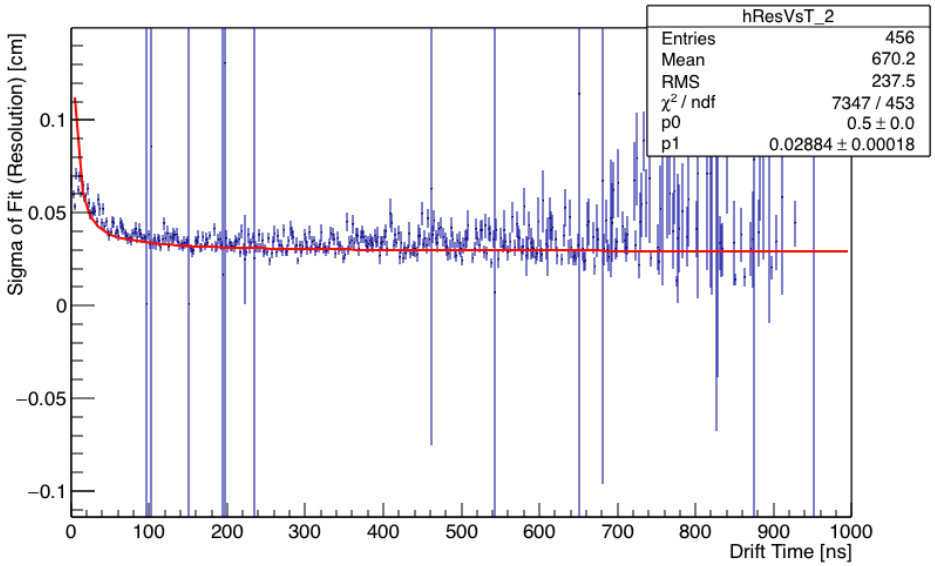
$$\sigma = \frac{p_0}{t+1} + p_1$$

These parameters had been derived from the simulation and were

$$p_0 = 0.11,\ p_1 = 0.00425$$

42.5 µm resolution!!
This detector is really nice!

Where are we really….



Using the fit to the left, these values were adjusted to

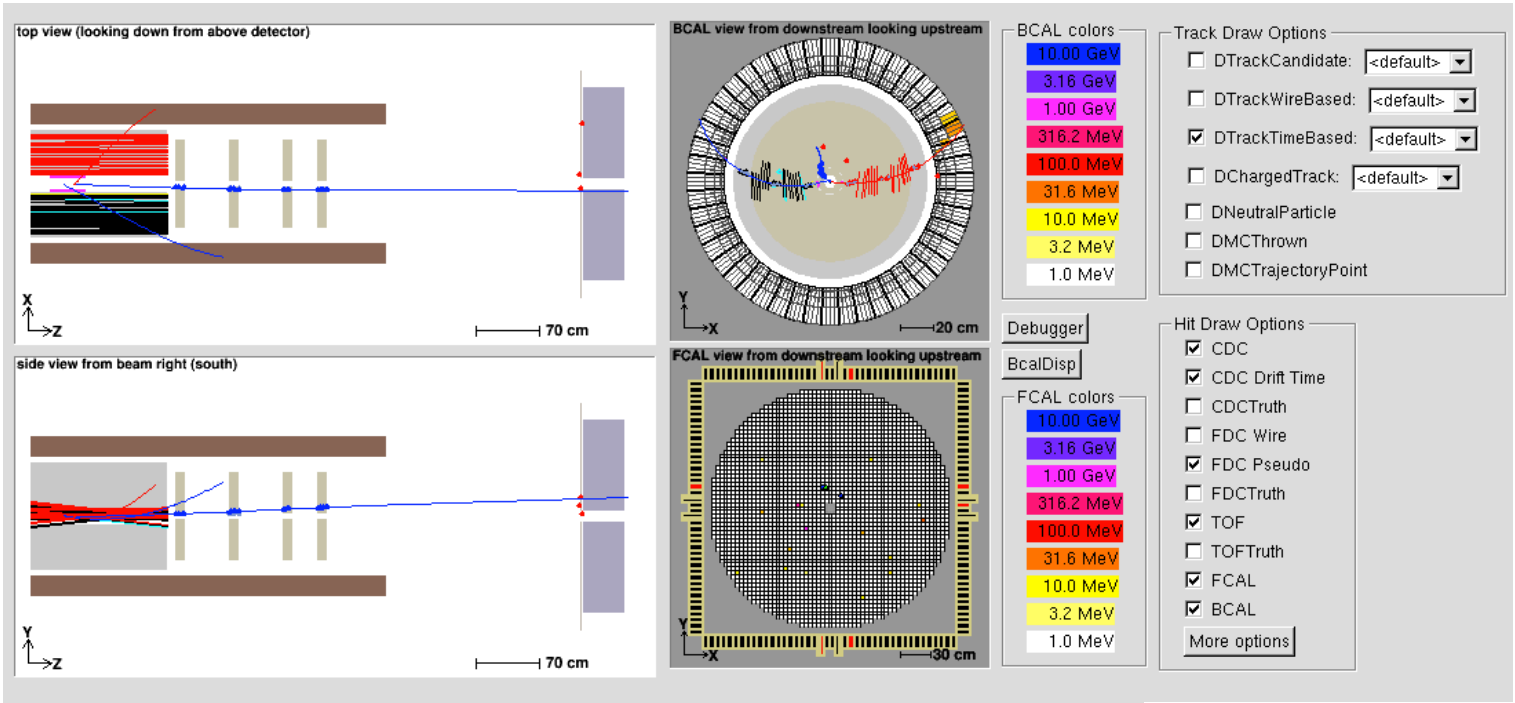
$$p_0 = 0.5,\ p_1 = 0.03$$

~300 µm resolution with current time-distance lookup

Now let's look at that event from before…

Changes to CCDB resolution parameters

Looks much better



Track Info

Thrown

trk:	type:	p:	theta:	phi:	z:
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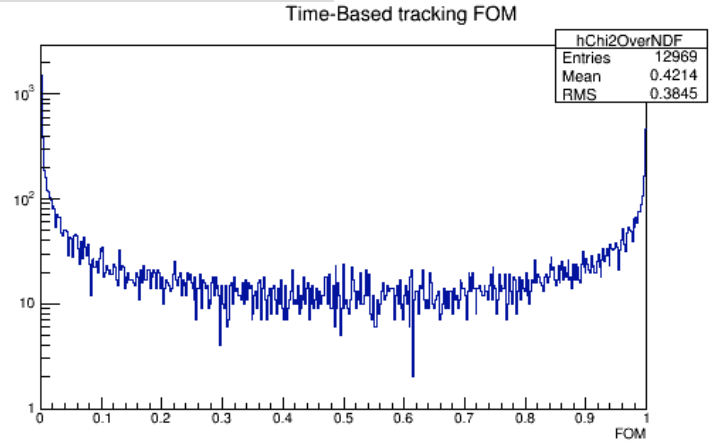
--------	--------	--------	--------	--------	--------

Reconstructed

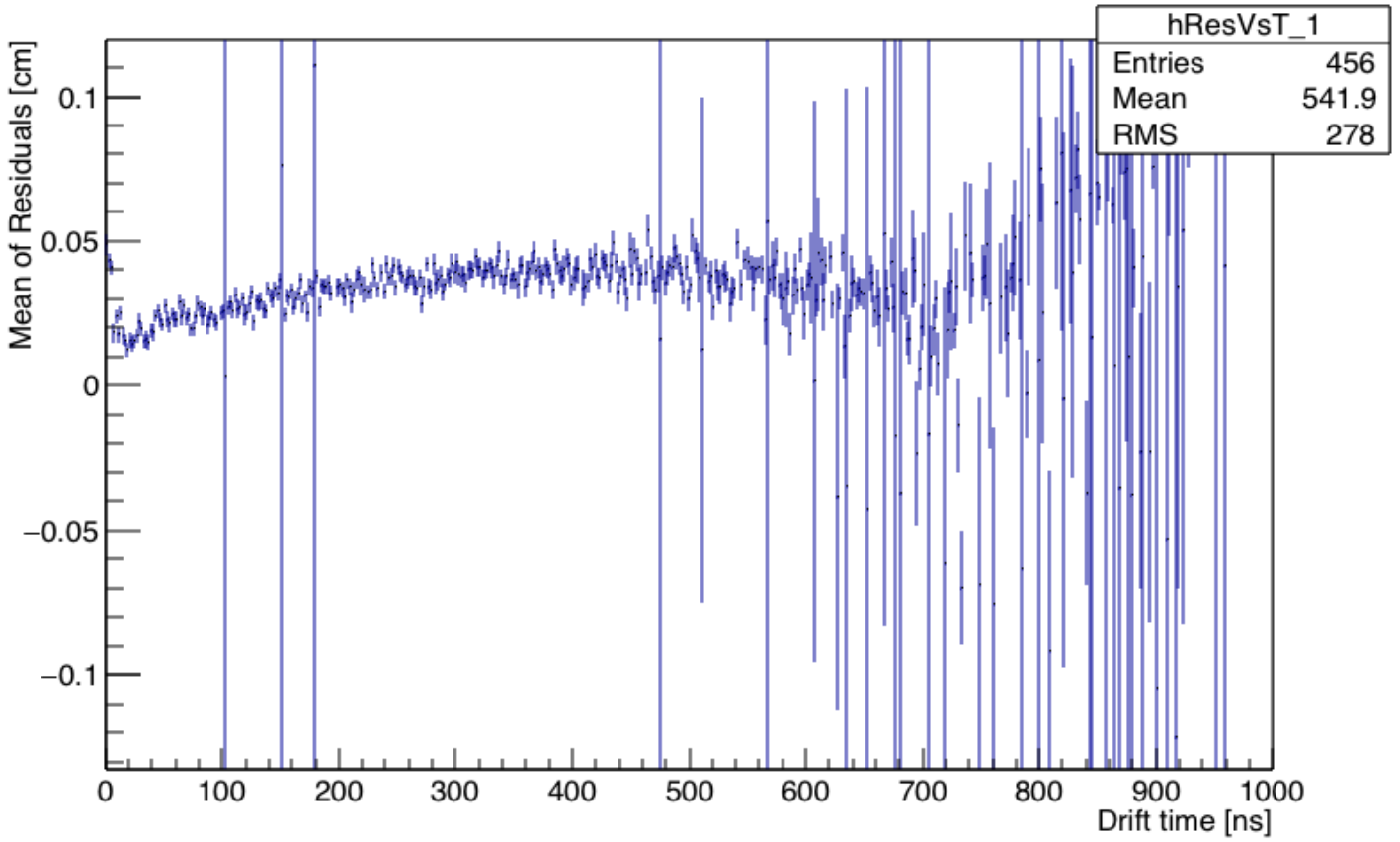
trk:	type:	p:	theta:	phi:	z:	chisq/Ndof:	Ndof:	FOM:
1	q=+	0.6613	29	-161.8	53.48	1.636	21	0.0331742
2	q=-	0.5767	46.55	-7.979	64.58	0.7458	20	0.781236
3	q=+	1.07	2.614	156.7	66.79	0.5007	14	0.934345

Still some bad behavior, but we may have to live with it for a little while.



Changes to CCDB resolution parameters

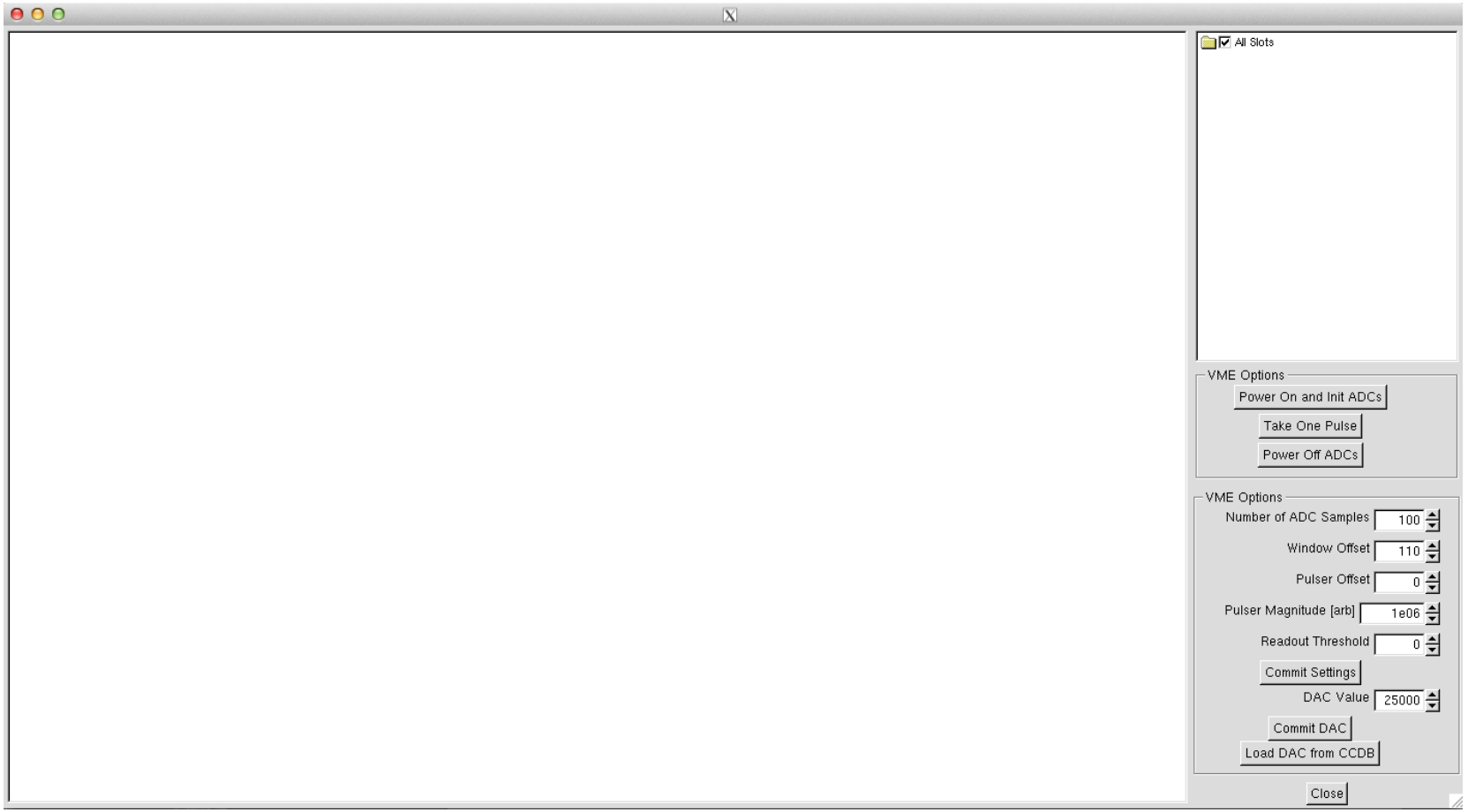
Work is now focused on selecting a better time-distance table



fa125 Test Bench

Program now available for testing of the fADC125 with the pulser. Should help with debugging the problematic channels.

```
[hdcdcops@roccdc1 ~]$ cd Standalone/TestBench/
[hdcdcops@roccdc1 TestBench]$ ./RunTestBench.csh
```



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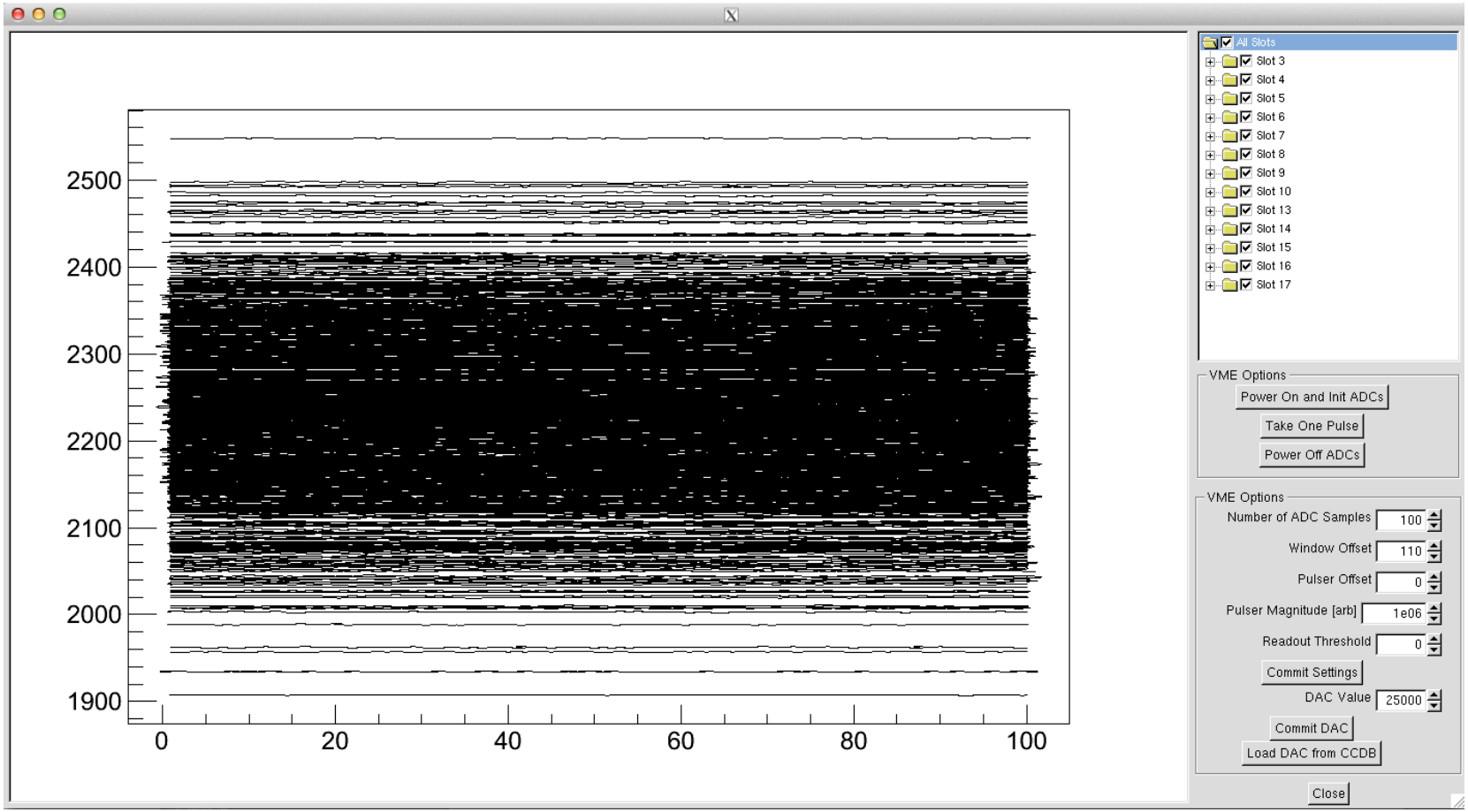
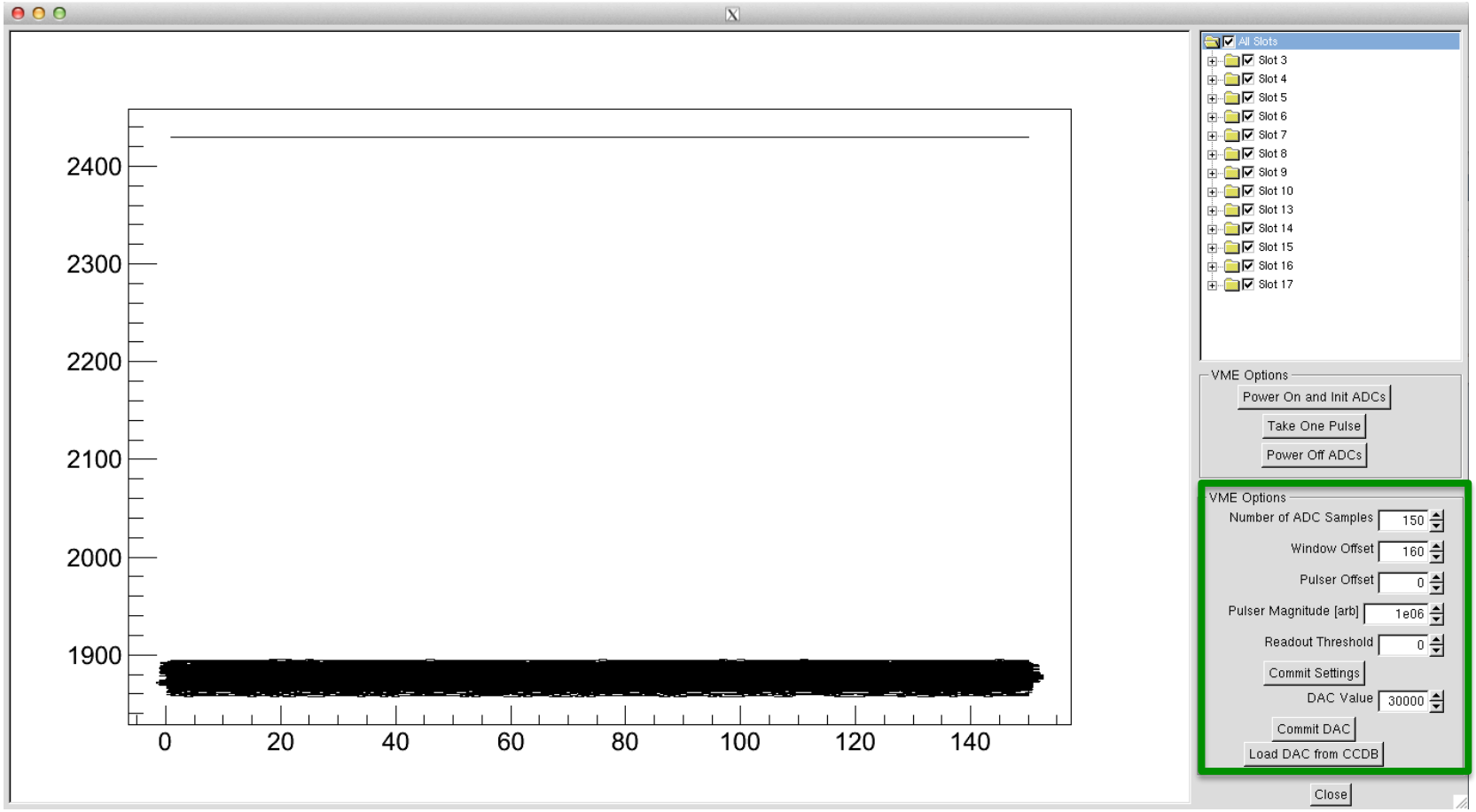


LV is off so this is pretty boring…

fa125 Test Bench

User can control fADC settings easily



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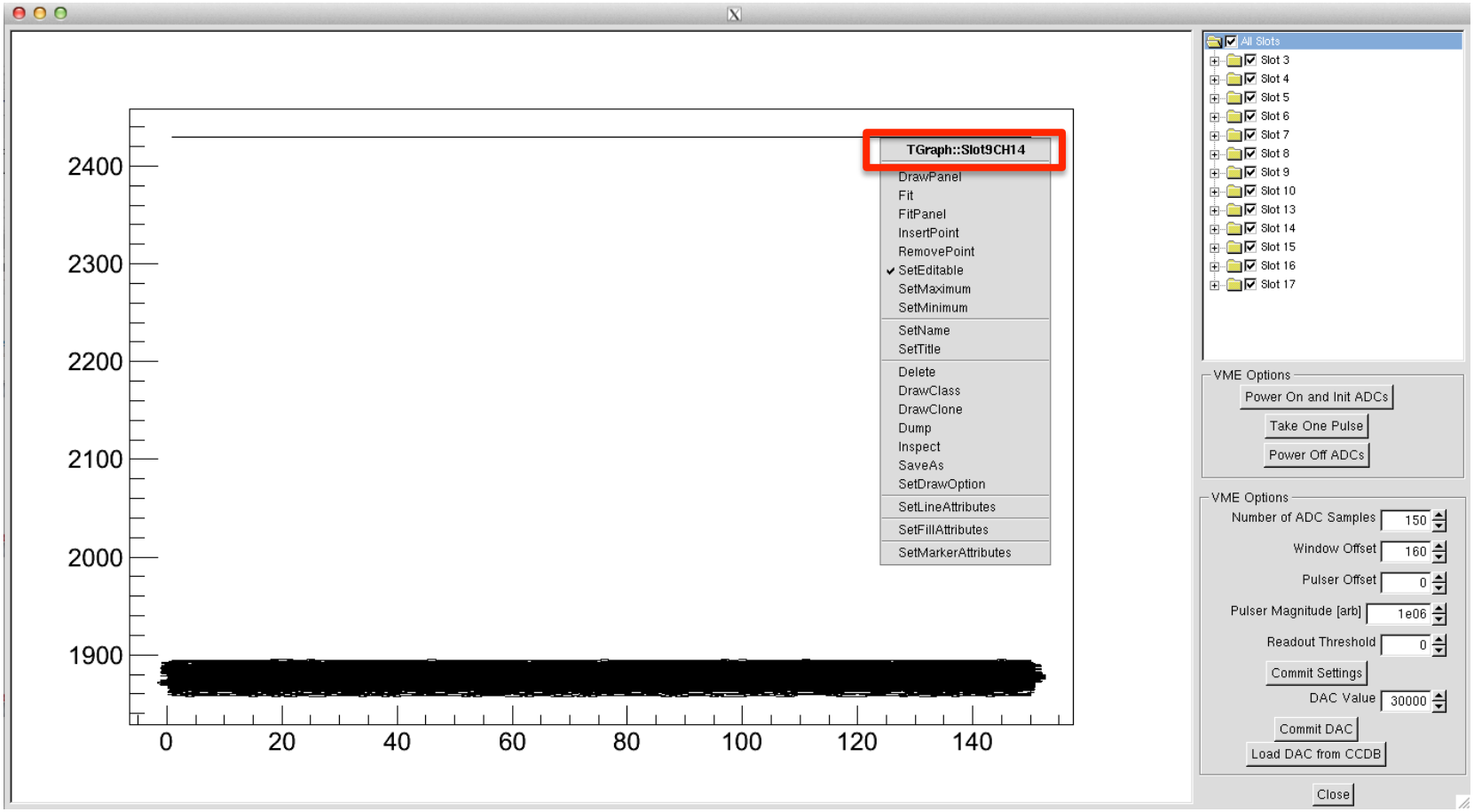

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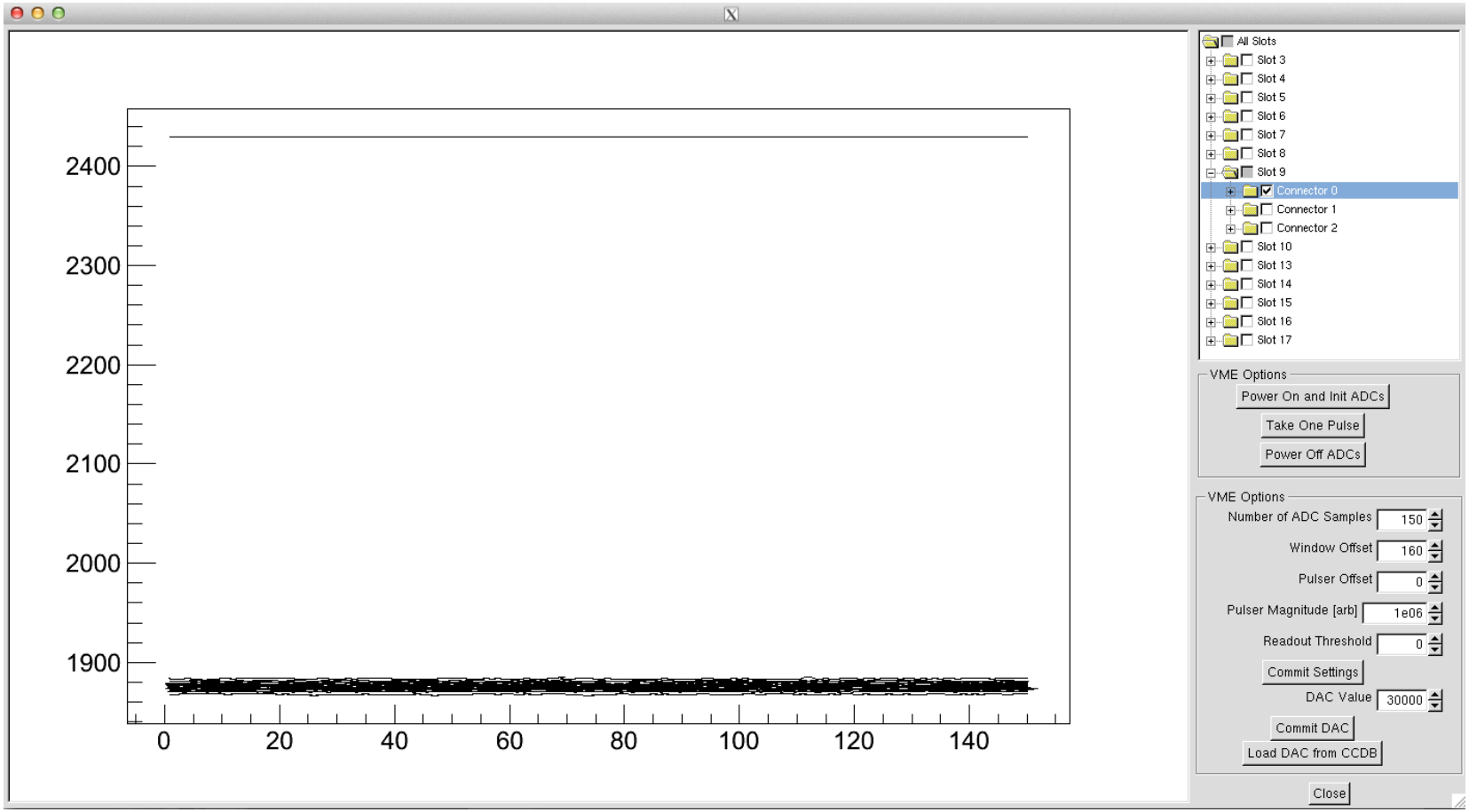
fa125 Test Bench

Can also select individual slots/connectors/channels



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fa125 Test Bench

I will be adding features as I have time. What is coming?

- Using the translation table for Crate/Slot/Channel->Det. channel lookup.
- Using the random trigger to look for real pulses.
- Setting the DAC values to a target baseline.

Suggestions welcome