Data Acquisition (DAQ) Status

- Layout of DAQ
- Inventory and Present Status
- Comparison of Qweak and HAPPEX ADCs
- Possible Upgrades
- To Do List

Parity DAQ



From Qweak: TRIUMF VME integrator



From Qweak: TRIUMF VME integrator



Put your detector PMT into this, output goes to ADC

Note, we've reconfigured the HAPPEX ADCs to also require these preamps.



TRIUMF current-to-voltage preamplifier for the Qweak experiment.

HAPPEX ADCs

Integrate signals over the helicity period, same aim as Qweak ADCs but different design.



HAPPEX ADCs

<u>Recent work:</u> resistors adjusted so that ADC works for 0-5V for 30 Hz < f < 240 Hz



Will be made available for any of our detector or beamline signals.

DAC noise pickup issue (10 ppm noise which mostly cancels)

<u>Recent work on HAPPEX ADC :</u> resistors adjusted

so that ADC works for 0-5V for 30 Hz < f < 240 Hz



DAQ Inventory and Needs

ltem	Deployed in our DAQ now	Spares on Hand	Needed
Qweak ADCs	18 (*)	0	3
HAPPEX ADCs	8	10	
Model 6100 cpu	4	2	
Model 5100 cpu in TS	1	2	
Crates including TS	5	2	
Trigger Interrupt (TI)	4	2	
Trigger Supervisor	1	1	
HAPPEX Timer	4	6	
Flexio board	1	0	3
Model 3801 Scalers	4	2	
Model 7200 Scaler	1 (injector)	0	1
Intel / Linux VME cpu	0	0	5 + 1 spare (**)

(*) I hear there are "a few" more Qweak ADCs in a cabinet at Jlab. Also, 2 at Idaho State
(**) If using CODA 3

CODA 2.5



CODA 2.6.2



• But costs money (new cpus)



DAQ Test Stand

Located in the TEDF building (Technology Engineering and Development Facility)

2 DAQ crates, computers, NIM electronics, test bench (adjacent cubicle unused).

Bryan Moffit volunteers to help with **CODA3** porting. It could use a student.

PREX/CREX Collab. Mtg, Oct 1-2, 2017

To – Do List for DAQ (and related)

Job	Status
Revive all crates	Mostly accomplished
Feedback	Underway, needed by Injector Studies
Run-dependent database generation	Software exists, need to revive
Coil pulsing	ditto
Panguin	ditto
Prompt analysis	ditto
Synchronization check	Dismantled, need to revive
E-logbook entries	Needs work since new E-logbook
DAQ for GEMs ?	The rest of the HRS DAQ is ready.
Upgrade to CODA 3 ???	An idea. We can start on test crate

The End

Backup slides on DAC noise pickup follows.



800 channels with reduced stepsize of 4. Residual noise is 4 channels RMS.



HAPPEX ADCs

DAC noise is added to "base" and "peak", then subtracted. This reduces differential nonlinearities. However, the DAC noise is also picked up and produces noise in the ADC value (peak minus base).



Time \rightarrow

