DAQ & Electronics

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– Typeset by FoilTEX –

Systems

- DAQ: Same system as in usage right now
  - New trigger supervisor
  - Event by event scaler/ oversampling
- Electronics: 98 setup with some improvements
  - Electronics Dead-Time
  - Autonomous Third Arm

Electronics Deadtime

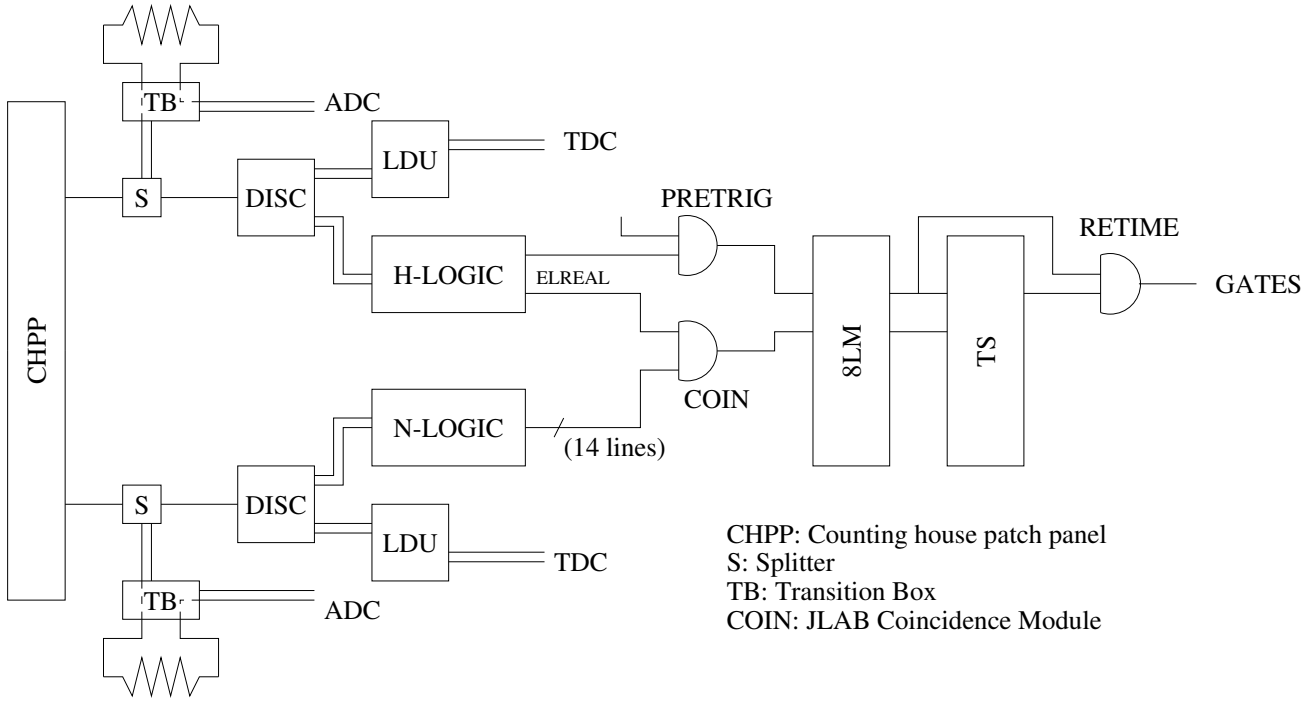
- Gen98 used e⋆B coincidence as main trigger
  - B (OR of all bars) showed large rates
  - Rate dependent electronics dead time induced (neglible impact on asymmetry)

- Gen01 will use “Open Trigger”
  read out neutron detector for each HMS event
  requires “Buffered Mode”‘ for DAQ

- Measurement of electronics deadtime with pulser

- e⋆B for diagnostics and as backup
  Coinc between subsets of bars and the HMS
  (JLAB coincidence module under construction)

Basic Electronics Scheme



CHPP: Counting house patch panel
S: Splitter
TB: Transition Box
COIN: JLAB Coincidence Module

Third Arm Equipment

- Gen98 cannibalized SOS electronics for the neutron detector, which worked fine for the experiment but it was a pain to restore SOS configuration after the experiment.

- For GeN01: Autonomous Third Arm
  - Fastbus Crate/ADC/TDC and SFI with CPU
  - VME crate with scalers and CPU
  - Trigger logic (CAMAC/NIM)
  - Cables, Splitters, Connectors etc:
    List submitted to Bill Vulcan

Electronic Modules

Modules	G_E^n	C	UVA	BS	status
NIM bin & cooling	6	6	1		+1
CAMAC crate & cooling	2	2	5		+5
Logic Fan P757/L429	10	10	3		+3
Gate Gen P794/L222	1	1	3		+3
Disc P708/P710 (L4608C)	2	7			+5
Multiscaler STR2701	13	16			+3
ECL Disc L3412/L4413	20	14	14		+8
Logic Units L4516	10	6	13		+9
16ch LDU Basel	19	6		15	+2
Logic Unit L622/P752	2	3			+1
Level Transl. P726/L4616	5	8			+3
4fold Logic L365AL/P755	2	2	1		+1
6ch Disc L821/P711	3	3			0
16ch Disc P706	1	2			+1
Dual Delay P792	6	6	1		+1
Logic Unit P754/P756	1	4			+3
Logic Matrix L2365	1	1			0
Level Transl. P7126	1	1			0
JLAB Coinc. Module	1	(2)			(+1)

Task list and Milestones

- Tasklist divided into 3 periods
  - Preparation (-05/07)
  - Installation (05/08-07/12)
  - Run (07/13-08/29 10/04-11/21 11/29-12/21)

- Milestones
  - Beginning of setup period (05/09)
    Strategies of Electronics and DAQ defined
    Documentation:
    http://galileo.phys.virginia.edu:~mfz7a/E-93026/DAQ+El/GEn01_electronics.ps
  - NDET on the floor (?)
    DAQ and Electronics ready for NDET tests

— PREPARATION — [ ]: done [ ]: in progress

NDET hardware: Overview/ requests **[zeier]**
- Fastbus/ VME crates and ADC/TDC/Scalers **[wood]**
- NIM/CAMAC crates/modules **[garrow]**
- COIN module **[cuevas]**
- cables/connectors **[vulcan]**

Design of NDET logic:
- simplified/improved 1998 version **[zeier/mitchell]**

Define scaler strategies:
- trigger/ gating/ oversampling/ readout **[zeier/wood/yun]**

Define trigger programming (8LM/TS):
- trigger logic, event types etc. **[zeier/mitchell]**

Define slow control logging needs for data stream (epics.dictionary) and epics logger (“Target logger”)
- injector **[fenker]**
- hms **[Hampton U]**
- polarized target **[mckee]**
- NDET **[warren]**
- Beamline **[mitchell]**

Review epics/CODA links with Poltar **[mcnulty/wood]**

CODA:
- define run types **[zeier]**
- define begin of run information **[wesselmann]**
- define end of run information **[wesselmann]**
- define user events (HV etc.) **[tadevosjan]**

— SETUP —-

Basic DAQ Setup

- Setup DAQ directory tree and test functionality **[wood]**
- Setup CODA database entries (run types etc) **[wood]**

DAQ Readout Lists

- Write Fastbus and Scaler readout lists **[wood]**
- programming 8LM/TS **[wood]**

Slow Control

- Setup epics logging **[wood]**
- write scripts which are executed in coda **[wood]**
- HV maps **[yun]**

Setup NDET/trigger electronics:

[smith/piasetzki/garrow/jourdan/zeier/student]

- install 3rd arm cables/delays/TB/splitters
- setup NDET logic - setup trigger logic
- retiming, ADC and TDC gates

Scaler Tsar **[yun]**

- Scaler cabling/ gating/ maps
- maintain report files (templates)
- certify scaler gating/logic/readout/unpacking code

Helicity: **[fenker]**

- check logic and redundant recording

Pulser electronics (deadtime check) **[jourdan]**

TBPM/SEM electronics **[steinacher]**

— RUN —

maintain DAQ **[wood]**

maintain NDET/trigger electronics
[smith/piasetzki/garrow/jourdan/zeier]

maintain scaler stuff **[Junho]**

maintain moller/helicity electronics **[fenker]**