

Options for the DAQ and electronics upgrades

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PRadion
adius

Deficiency of the existing system

- FASTBUS ADC
 - Old, slow, problem with reliability and spares
- Trigger
 - uses dynode signal: Signals to ADC and to the trigger are not the same
 - Contributes to the uncertainty of trigger efficiency
 - Trigger is just analog sum. Summing units add noise.
 - more background triggers, particularly from cosmic
- Timing information is limited to trigger groups. No timing for individual PMT
 - Accidental hits and clusters

Advantages of fADC

- Fast
- Pedestal is measured for every event simultaneously
- Provide good timing information, subnanosecond resolution
 - Rejection of accidentals
- Trigger capabilities:
 - all digital
 - cluster finding, includes timing to reject out of time hits from the cluster
 - cleaner clusters,
 - the same information is used for trigger –
 - less uncertainty in trigger efficiency
- Use RF to further clean accidentals
 - constraint on the vertex

Cost estimate

Qty	Description	cost		Notes
1	VXS crate	\$14,000	\$14,000	Includes high current supply and high RPM fans
16	FADC250	\$5,200	\$83,200	16 boards per crate (256 channel total) Lemo inputs
1	SD	\$1,100	\$1,100	Signal distribution board
1	VTP	\$9,700	\$9,700	Trigger processor
1	TI	\$2,200	\$2,200	Trigger interface
1	CPU	\$4,000	\$4,000	Linux readout controller
		Total:	\$114,200	

- One crate can read out 256 channels. We need 8
- Replace connectors on signal cables with Lemo
- (Upgrade HV for the tagger)

Total cost ~1M\$