1 March 2006

P. Smith, scribe

Minutes from GlueX electronics conference call

Participants:

IU: Paul Smith, Scott Teige, Ryan Mitchell, Matt Shepherd, Alex Dzierba, Gerard Visser (IUCF)

Regina: Mauricio Barbi

Alberta: Jim Pinfold, Jan Schaapman, Lars Holm

CMU: Mike McCracken, Zeb Krahn

JLab: Elliott Wolin, Elton Smith, Chris Cuevas, James Proffitt, Ed Jastrzembski, Simon Taylor, Dave Abbott, Fernando Barbosa

CNU: Dave Doughty

Fernando Barbosa gave an update on the status of the JLab flash ADC; things are on track for a first prototype in June. There was considerable discussion of the time fit to the pulse leading edge. Simon Taylor has been able to get time resolutions of about 1/3 of the sampling time on the prototype FDC cathodes. It was suggested that he try fitting a time to the anode signals instead of the cathodes. Scott Teige's note (GlueX-doc-426) shows a resolution of better than 1/10 of the sampling time should be achievable for PMT pulses which are much more uniform in shape than chamber signals. Scott's algorithm could be implemented in a lookup-table with a 24 bit address, but this is much larger than can be accommodated using internal FPGA memory. However, this could be implemented in a FLASH memory external to the FPGA. The time fitting algorithm only needs to consider pulses after sparsification; the expected occupancy in the GlueX calorimeters is something like 2%. Thus, the time fitting algorithm only needs to be implemented on a per board or per crate basis, not per channel.

It was agreed that time fitting is not a requirement for the first FADC prototype. Time fitting will be discussed at the upcoming electronics meeting, and data will be collected using the FADC prototypes with the prototype calorimeters; further refinements of the algorithm and time resolution requirements will be ongoing.

The first FADC prototype may include the energy sum section depending on the availability of Xilinx chips with the gigabit serial transceivers. This will be tested using a loop-back from a VXS switch slot to verify the data communication through VXS. The time scale for an actual energy sum trigger is unclear and will be discussed at upcoming meeting.

Possible dates for an electronics meeting at IU were discussed; April 6 & 7 were chosen. An agenda will be circulated within a week.

The status of FDC and CDC testing was discussed. The Struck 200 Msps VME FADCs have been requested, but the PR is awaiting a signature. Gerard thought it would take about 6 weeks after funding arrives to produce the new differential-to-single-ended adaptor/shaper boards. In the meantime, Simon will loan CMU one of the "VPI Post-Amp" NIM modules to use with the CLAS preamp boards provided by Fernando to CMU. Mike McCracken is designing a new HV distribution board which the CLAS 16 channel preamp board will plug into.

Mitch Newcomer at UPenn now has 2 students ready to begin work on the adaption of the ASD for GlueX. The chamber preamp project will be the responsibility of Alberta with UPenn acting as a “contractor”. Mitch is working on a set of specifications for the preamp chip; Jim Pinfold will arrange for a conference call to discuss these specifications during the week of March 6.

There are questions about the final packaging of the Alberta CFDs - some computer interface is desirable in order to implement threshold scans, test pulses, etc. VME was suggested. This will be discussed at the upcoming meeting, but for the next prototype a NIM module would allow direct comparison to the existing NIM prototype. Recent tests of the TOF system in Russia suggest that a leading edge discriminator with a time-walk correction is as good or better than a CFD. This will be studied further this summer at IU; various commercial CF and LE discriminators will be compared to the Alberta prototypes.

Elliott is making progress on putting together DAQ electronics for the fall 2006 BCal test run. There is still some question of which ADC and TDC modules to use. The current plan is for FASTBUS modules which are available at JLab; probably a LeCroy 1881 ADC and a LeCroy 1872 TDC. This TDC operates in a common Start mode, so delay cables will be needed. The Hall B tagger will be read out using the existing electronics based on CAEN TDCs.