

~~Phase 2~~ LARIAT-II Update

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Preliminary Cost Estimate

- 2000 channels (3mm pitch, 3m, 2 views)
- Copy μ Boone, based on official cost table, fully burdened costs
- Front end \$484k – cold electronics
board/shaper/amp/ASIC, TPC cabling, feedthrough, intermediate amp, digitizer
- Readout \$94.3k – FPGA board couples to digitizer (need 32), 2 crates, 2 controllers, 2 XMIT modules, 6 PCIe optical links, trigger crate and electronics
- DAQ \$37.2k – computers
- TPC \$177k – assumes fixturing/machine reuse, fabrication only → “some assembly required”

Other issues-I

- Costs are for fabrication only, no design.
 - What will need some design work?
 - Who will do it? How much will it cost?
- How much electronics testing is needed? Who?
- Can we gang multiple channels?

Asked Bo Yu, BNL (μ B L2 TPC coordinator)

 - Yes, combining 2 is OK, from the standpoint of noise/capacitance: $C \rightarrow 1.5C$
 - But 192 channel cold motherboard needs an adapter
 - 3 \rightarrow 2 views also would require an adapter
 - Baseline shift on induction planes. Programmable?

Other issues-II

- Electronics cost review: is my estimate right?
- Craig Thorne (μ B DPM for Det. Syst.) will take a look.
- Do costs scale with # of channels? Are there hidden “pedestals” in the μ B fabrication cost table?
 - Big pedestal cost for ASIC production, need to piggy back and coordinate with μ B.
 - Feed-through pin boards (?) were ATLAS leftovers, unclear how many more would be available.
- Sept 10 DOE FOA vs. Field Work Proposal (FWP)
 - Worry over ~6 month DOE proposal review
 - Can we use FWP for part or all of this project?
 - Would it help us go faster and piggy back?

Other issues-III

- PMT readout, external devices and trigger
 - μ B crates are customized, not VME
 - Need a TDC for TOF \rightarrow VME
 - Rather than copy μ B, read everything out with multi-channel VME digitizer and trigger via FPGA
 - Trigger out over coax to FEM crate controllers
 - Seems cheaper too.

Other issues-IV

- Budget needs to be clarified ASAP
- Putting together a proposal skeleton
 - try to check into SVN soon
 - redmine wiki page with instructions
 - bios, C&P, prev results, facilities from ALL
- Major sections
 - Introduction and motivation
 - project objectives
 - what we want to build, what we will do with it
 - project timeline
 - budget and justification

I will not be able to do
this without your help