APEX

Collaboration

Discussion

Outline

- Readiness for APEX
- Funding
- Theses & Publications
- The way forward
- Discussion

Readiness for APEX

critical path

- new equipment
  - vacuum chamber
  - compensation magnets
- commissioning of the equipment:
  - septa
  - SciFi
  - target
- radiation shielding design/review/construction
- reach & run-plan re-analysis
- development of the software for:
  - SciFi DAQ
  - optics calibration
  - high rate data analysis
  - bump search simulation
- experiment readiness review

i.e. longest lead items, need significant progress on ~6 month time-scale

Readiness for APEX

critical path

- new equipment
  - vacuum chamber
  - compensation magnets

Vacuum connections	\$3k, HU+RU, committed \$5k, Collaboration 4 m-w design, Hall A	estimated cost \$30k	design is under way
Compensation magnets	\$2k, Collaboration 0.5 m-w design, Hall A	estimated cost \$5.5	ready for design

can be covered by Hall A in principle, but collaboration funding could allow earlier readiness

Readiness for APEX

critical path

- commissioning of the equipment:
  - septa
    - – acceptance & optics studies … Seamus/CREX?
  - SciFi
    - – checkout, in-hall beam tests
      - …FIU/Pete + student
  - target
    - – need to analyze heat load and cooling for 1, 3, 4-GeV settings
      - …need a point-person who can spend some time on this
    - – need operations plan (should work closely w/ JLab target gp.)
    - – *very important; need collaborator to take ownership*

Readiness for APEX

critical path

- radiation shielding design/review/construction
  - RADCON is providing full support and ideas
  - *very important; need collaborator to take ownership*

Readiness for APEX

critical path

- reach and run-plan re-analysis
  - to optimize run-plan w/ APEX septum
  - explore other energy settings, given that we're in 12 GeV era
  - *discuss further after James Beacham's talk*

Readiness for APEX

- software development
  - high rate data analysis: *could directly impact run-plan*
  - SciFi DAQ
  - bump search simulation
  - optics calibration

Existing and Future Funding

Item	Design and engineering cost	Construction cost	Status, 3/1/2014 Comments
Septa magnet	$16k (NCCU), complete	$79k, Canadian NSERC Discovery Accelerator Award, P. Schuster, Waterloo & Perimeter Institute	ordered, $134k, delivery expected July 2014
		$25k, Alfred P. Sloan Foundation, R. Essig, Stony Brook	
		$15k, Dep. head's Fund, G. B. Franklin, Carnegie Mellon	
		$15k, NSF, CSULA, K. Aniol	
Vacuum connections	$3k, HU+RU, committed $5k, Collaboration 4 m-w design, Hall A	estimated cost $30k	design is under way
Compensation magnets	$2k, Collaboration 0.5 m-w design, Hall A	estimated cost $5.5	ready for design
Extended target	SLAC, 2010, complete	SLAC, $5k (2010)	requires 3 m-months postdoc, Collaboration
Sieve slits (optics)		existing pair	
Beam line corrector	existing magnet	used in 2009 test run	
Septa magnet infrastructure: a. existing platform modifications b. water distribution modifications c. current bus d. acceptance	Hall A design team: a) 4 m-w design b) catalog items c) 4 m-w design d) 1 m-w	a) Hall A, estimated $10k b) Hall A, estimated $5k c) Hall A, estimated $10k	

Existing and Future Funding

APEX detectors

HRS(s) detector packages	Hall A, 2013-2014	Part of HRS(s) preparation	ready March 2014
SciFi - optics detectors	Hall A, 2012 complete	Hall A OPS, $25k (2012), complete	requires 3 m-months postdoc, Collaboration

Hall A preparation

Radiation shield of HRS power supplies	1 m-week design	Hall A, estimated $3.5k	Reuse of existing (GEn) lead/steel shield
Survey and alignment	JLab engineering team	Hall A, estimated $10k	
Installation		Hall A technical team	3 months

Summary of remaing needs	3.5 m-m Hall A designer $7k, Collaboration	$74k, primarily Hall A OPS	

Existing and Future Funding

New grant applications submitted (mainly to fund scientific manpower)

Agency	Title & Submitter	Amount
DOE (HEP) & NSF (submitted 9/13 & 10/13)	"The A' Experiment (APEX): Search for a New Vector Boson A' Decaying to e^+e^-", R. Essig, Stony Brook	$422,847 request included 1 postdoc for 3 years, 1 month summer salary, travel, equipment ($10k corrector magnet, $15k vacuum chamber, $35k septum magnet)

Approved grants (mainly to fund scientific manpower)

Agency	Title & Submitter	Amount
DOE (NP)	"Experimental Medium Energy Physics" G. B. Franklin, Carnegie Mellon	$2,936,000 Includes 3 years of support for Carnegie Mellon's activities in Hall A and Hall D. Expect to contribute, 1 graduate student, 50% of a post-doc, 0.25 FTE faculty to the APEX experiment over the 3-year grant period.

Collaboration

- **New collaborators are welcome — now is a great time to get involved or join the effort for the first time!**

- We want to create a list of active APEX collaborators
  - to keep in touch about progress…
  - for grant reporting…
  - to make sure everyone's on email list…
  - starting point for eventual author-list…
  - in addition to the open APEX list, not a replacement

- Please let us know of students and postdocs who will be contributing to APEX (and rough amount of time)
  - Email Rouven…rouven.essig@stonybrook.edu

Theses & Publications

Discuss:

Instrumentation

Physics results

The way forward

- monthly meetings to get updates (Fridays 3pm?)
- collaboration meeting in fall?

Discussion