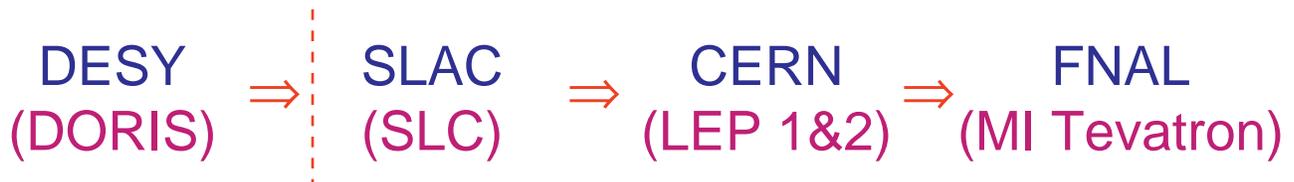


Response to HEPAP Subpanel Report

Background (where viewpoint is coming from):

- University-based (I'm part of the 80%)
- Chasing the energy frontier



***Involved in for years
and strong advocate of a linear collider***

- So:
- Snowmass 2001? ⇒ Yes! Finally!
 - Report, general recommendations, physics justifications ⇒ *two thumbs up!*

But, how to get there, what about rest of field?

*Rick Van Kooten
Indiana University
28 Jan. 2002*

*HEPAP Meeting
Latham Hotel
Washington D.C.*

Would I work on a LC regardless of site?

Yes

Would I prefer having it sited in the U.S.?

Yes

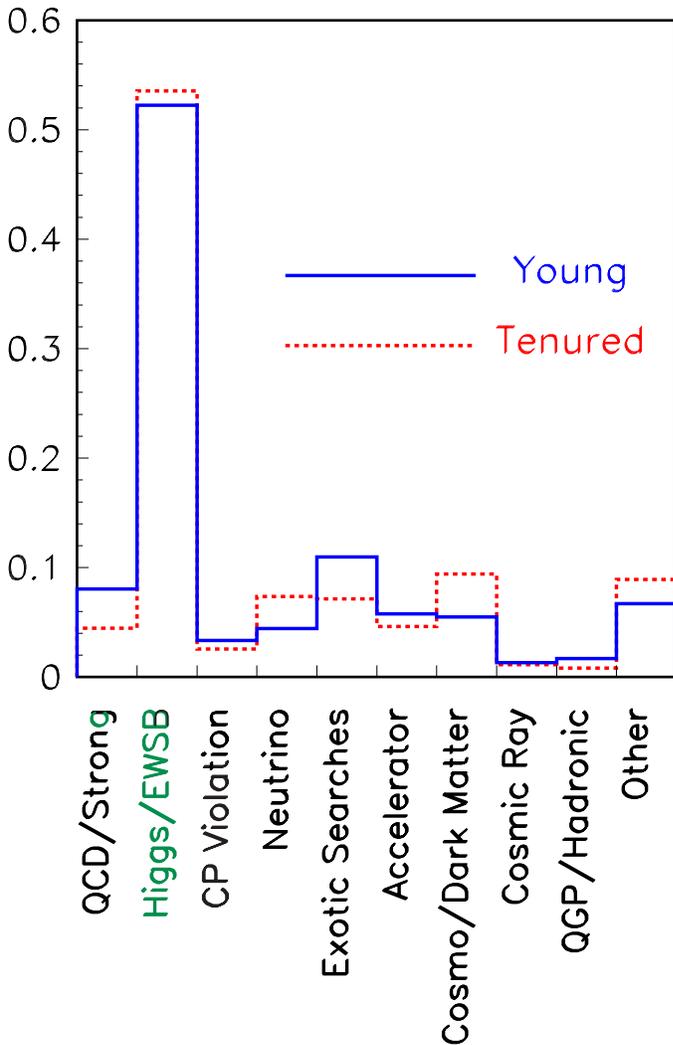
Colleagues with similar opinions

⇒ e.g. Young Physicist's Panel Survey

Results on the Survey of the Future of HEP

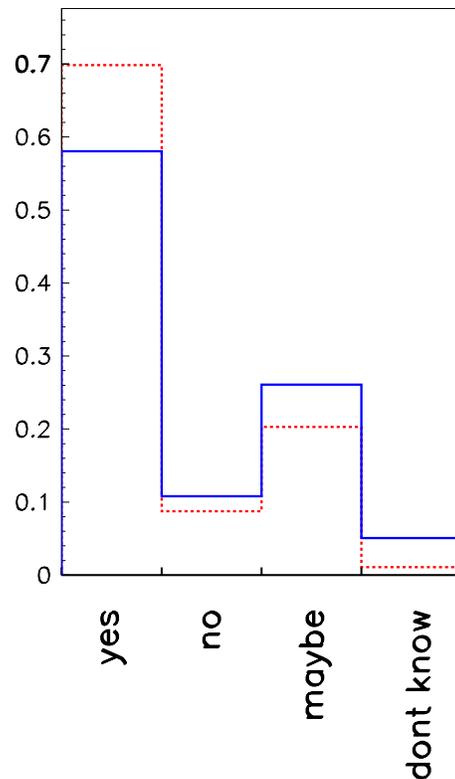
(The Young Physicists Panel, hep-ex/0108040)

~1500 physicists



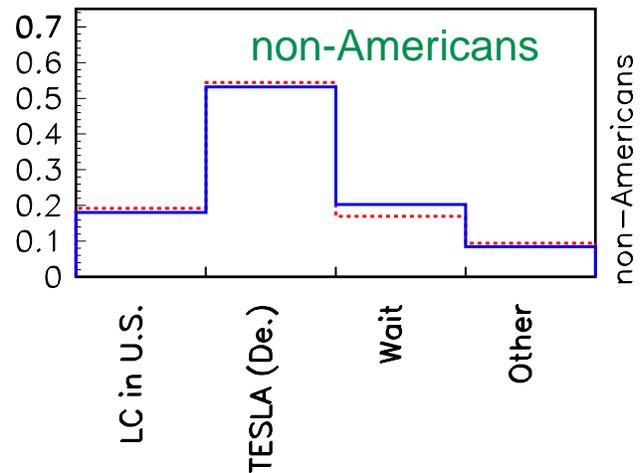
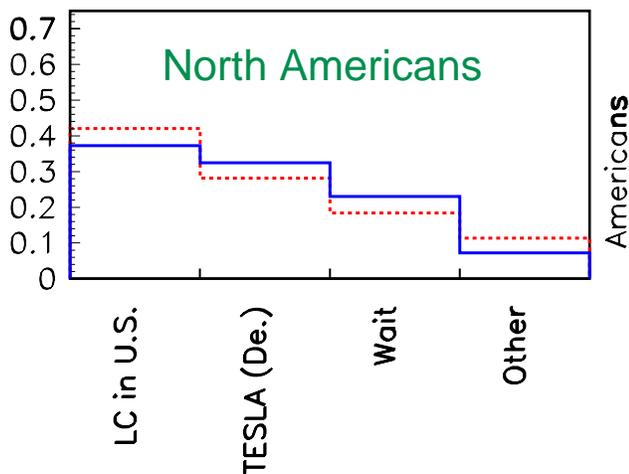
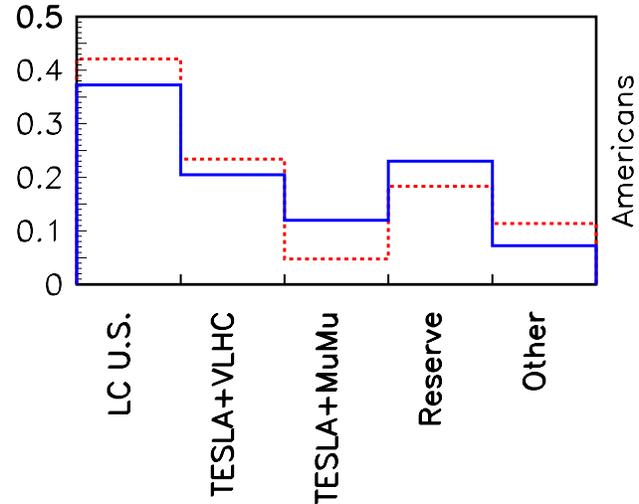
- What do you think is the most important physics for the *field* over the next 10 - 25 years?

- Does this science you selected require a major *new* facility?



"Flagship" Machine Options

- New e^+e^- collider (NLC/TESLA/CLIC) in U.S. soon, continued research in VLHC muon storage/collider technologies
- TESLA in Germany soon, goal of VLHC in U.S.
- TESLA in Germany soon, goals of eventual muon storage/collider in U.S.
- Reserve judgement for several years, continue research



Given choice of building a LC, reserving judgement, or creating their own opinion,

"80% of Americans and non-Americans prefer a LC"

Our Field

At least my generation/age group came after the "good old days" in two areas:

Physics

- Absolutely beautiful and fundamental results, advances, measurements, and tests of the Standard Model, **but no unexpected experimental discoveries!!**
- But, agree that next decade poised to change this (experimental evidence, new theory ideas)
- Despite this, **proportion of "best and brightest" people entering the field has gone down** ("trickle down" from public perceptions)
 - fi *outreach even more important to convince tax-paying public and new people in the field*

Funding

"The health of university-based research is a crucial element of our long-range plan.

Budget problems over the last decade have hit university groups particularly hard, since practically all their expenditures support people.

[flat budget = cut program]. It is important that a high priority be given to restoring the strength of university-based research, as recommended by the 1998 HEPAP subpanel."

When will it happen? Needs to happen first?

Plus **protect** existing investments!

- fi Need to exploit existing "onshore" efforts (Tevatron/MINOS/BaBar/CLEO/astrophysics) and other international HEP projects **fully**

Related Aside

- Important difference between American and non-American (i.e., European in this case) programs:

Not working on a LHC experiment?

fi Americans almost always extremely busy working on one of these "onshore" experiments

and European?

fi Often can devote larger fraction of time to future efforts

(modulo the very important contributions from non-American colleagues to current on-shore experiments!)

- Need more people!

"Yep, the LC is the next best thing to do..."

Phase
fi
Transition

Doing at least some LC-related work

At both universities and national labs!

"Pocket" Roadmap

- Program + 0%

⇒ "important but selective role", lose leadership

Quantify non-HEP benefits 

- Program + 10%

Onshore

Offshore

LC

v / p

Flavor, *B*

- Program + 30%

Onshore

Offshore

LC

⇒ *v / p*

⇒ Flavor, *B*

"...both scenarios, sacrifices will need to be made"

- Fourth scenario?

"Good new days" of physics

⇒ "Good new days" of funding?

Organization

- U.S. Linear Collider Steering Committee
 - ⇒ excellent idea; internationalization, collaboration early before technology and siting choice
- P5 Panel
 - ⇒ also excellent idea; to set priorities of **med.-scale projects** and guardians of the roadmap
 - ⇒ "drawn from university, laboratory (+PAC's), and **international** community"

But P5 boundary conditions depend so much on the siting of the LC. How to deal with this?

Is P5 envisioned to be an international advisory panel?

- Technology choice for LC
 - ICFA/Loew Panel + U.S. LC Steering Committee after evolution into part of truly international collaboration ⇒ **fairly clear**
- But **Technology Siting!**
 - and siting affects the whole global field

Need for a next level up? Global P5?

**Worldwide
balanced
program**

(Global Accelerator Network reduce impact of siting?)

Detector R&D

Perception

- MRI of NSF
 - ⇒ more for instrumentation toward approved projects? (development for specific applications)
- DoE Advanced Detector Program
 - ⇒ more exotic ideas further from integrated detector implementation
- LC detector R&D

Development specifically for LC

- ⇒ Some of it falls somewhere in between
- ⇒ **Need larger community**

Tough Questions

that one may expect from community

- Why an early start?

When will synergy between the LHC and LC be needed?

- Other physics scenarios:

e.g. dynamic/strong symmetry breaking, signals not so distinctive (need both machines!!)

Other Sciences

that one may expect from community

- Light source/X-ray FEL not in NLC/JLC base design (but could be!)
- TESLA does; many more scientists from other fields (biophysics, surface science, nanotechnology, etc.) "on board"

Conclusion

Is the report

" a plan that is ambitious, sound and reflects the desires of the U.S. and international communities for the future of the U.S. High Energy Physics program."?

In my opinion, yes.

Bring on the "good new days"!