

University Program:

Perspective, Plans, and Pleas

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Perspective

- University groups are a vital part of the particle physics program, and are central to
 - the construction and operation of experiments
 - the analysis of data
 - theoretical advancement
 - the future: universities provide *all* students!
- The strength of the NSF and DOE University groups is due to grant programs which provide
 - “base/core” support of faculty, postdocs, students, staff
 - support of centers and project-specific programs

“Base/Core” supported activities are at risk:
Students, Postdocs, and Faculty are vulnerable

DOE Physics Research
University Program Budget

FY01: \$109.0M

FY02: \$102.9M

FY03: \$105.0M

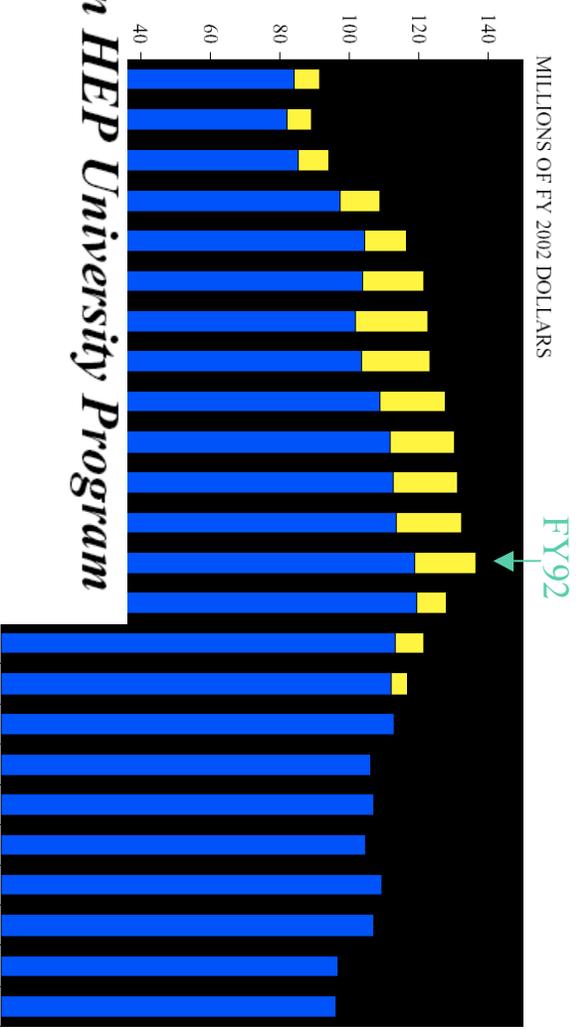
FY04: \$107.9M*

(no inflation)

*Request



Physics Research University Program Funding



Reduction in real \$\$ since FY92

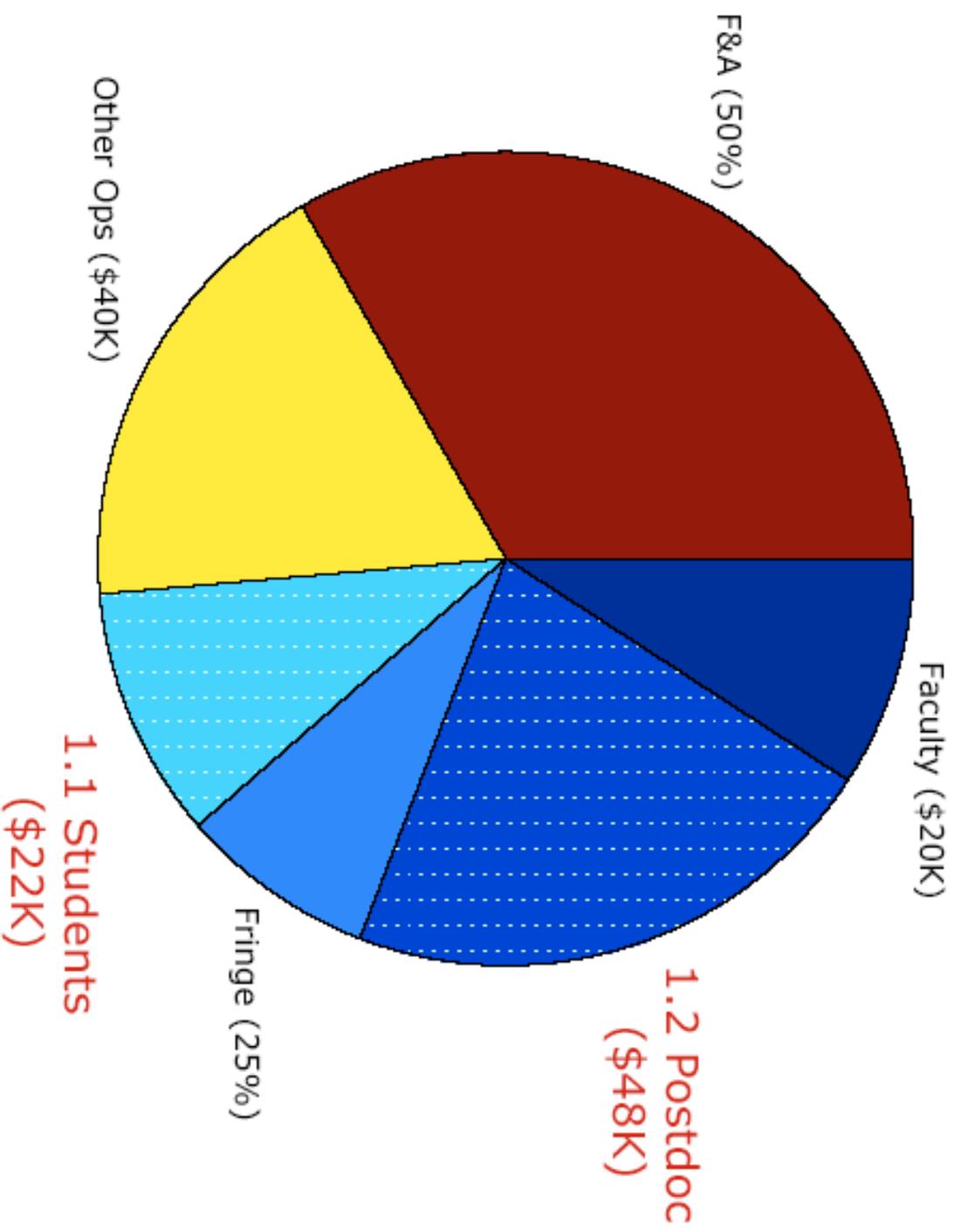


FY 2001 DOE-Funded FTE's in HEP University Program (% Change since FY 1992)

Program	# faculty	# postdocs/research scientists	# graduate students	TOTAL
Theory	225 (-17%)	110 (-16%)	116 (-37%)	451
Experiment Accelerator Based	284 (-3%)	332 (+28%)	312 (-26%)	928
Experiment Not Accelerator based	35 (-8%)	36 (-14%)	35 (-24%)	106

Resulted in reduction of personnel

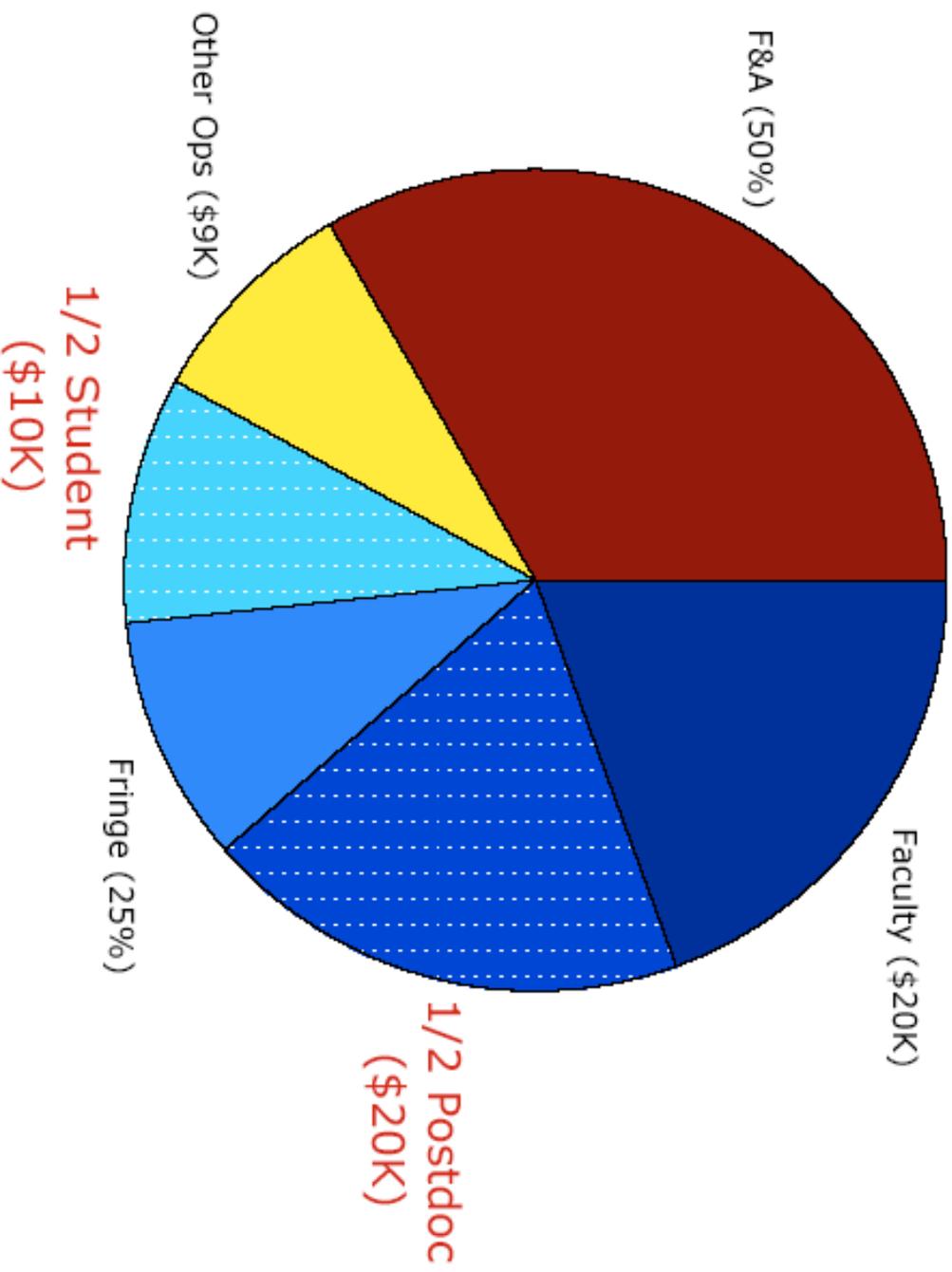
\$221K DOE Experimental average per PI in FY01 A “toy model” of Grant Expenditures



DOE FY01 Support: Experiment

- Median support (~\$180K) differs from Mean support (\$221K)
- University Program has suffered 4% loss from FY01 to FY03... w/o accounting for inflation
- Other Ops: Travel, Supplies, Equipment, **Technical Support** ...
 - Loss of Infrastructure support on base funding
 - Increased Reliance on Project Funds
- Loss of long-term research staff
- **\$\$ Reduction = Loss of Personnel**

\$104K DOE Theory per PI average in FY01 A “toy model” of Grant Expenditures



DOE FY01 Support: Theory

- Median support (~\$80K) differs from Mean support (\$104K)
- University Program has suffered a 4% loss from FY01 to FY03...w/o accounting for inflation
- Other Ops: Travel, Supplies, Computer...
 - ~9% of total!
- **\$\$ Reduction = Loss of Personnel**

NSF

- The EPP Program is multifaceted
 - Core Grant program
 - rising in recent years...(2002 was hopefully anomalous)
 - better in FY04? final FY03?
 - CESR/CLEO
 - decades of distinguished heavy quark physics
 - Astrophysics
 - integration of astrophysics with HEP as a whole
 - Focused programs which benefit the whole of HEP
 - regardless of funding affiliation
 - MRI, ITR, MREFC, etc
- Theory, Cross-Cutting Programs...
- Hard to compare with DOE...homework required

What can we do as

University Representatives?

- University representatives are supposed to provide university community presence at HEPAP
- **From talking with predecessors, we see a difficulty**
 - Lab Directors can be very specific: they manage effort
 - For now, we can only be anecdotal and personal

We need a way to gauge the real impact of funding levels on physics within the university community

Ideas

- **Work with DOE/NSF to understand state of university program from their perspective**
- **We need information from university groups: plan to organize a**

π R²: PI Review Retreat

Patterned after the “Midwest Chairs Organization”

-one day with DOE/NSF PI's

Goal: assess the impact of incremental budget cuts on physics, and state of particle physics in academic community.

(Eli Rosenberg)

The University Program is Invisible!

SCIENCE

DOE FY04 SC Budget Narrative:

Science

	(dollars in thousands)			
	FY 2002 Comparable Approp	FY 2003 Amended Request	FY 2004 Request to Congress	FY 2004 vs. FY 2003
Science				
High energy physics.....	697,383	724,990	737,978	+12,988
Nuclear physics.....	350,589	382,370	389,430	+7,060
Biological and environmental research.....	554,125	484,215	499,535	+15,320
Basic energy sciences.....	979,560	1,019,183	1,008,575	-10,588
Advanced scientific computing research.....	150,205	166,557	173,490	+6,933
Science laboratories infrastructure.....	37,125	42,735	43,590	+855
Fusion energy sciences program.....	241,100	257,310	257,310	—
Safeguards and security.....	50,230	48,127	48,127	—
Program direction.....	149,467	137,332	150,813	+13,481
Workforce development for teachers and scientists.....	4,460	5,460	6,470	+1,010
Small business innovation research (SBIR).....	99,688			
Subtotal, Science.....	3,313,912	3,288,259	3,315,318	+47,059
Less security charge for reimbursable work.....	-4,460	-4,383	-4,383	—
Total, Science.....	3,309,452	3,283,876	3,310,935	+47,059
				+1.4%

PROGRAM DESCRIPTION

The **Science** program funds energy related basic research in the following areas: health and environmental consequences of energy production and development; fundamental science that supports the foundations for new energy technologies and environmental mitigation; a science base for fusion as a potential future energy source; fundamental research in energy, matter, and the basic forces of nature; and advanced computational and networking tools critical to research.

In support of its mission, the Science program has responsibilities in three main areas: selection and management of research; the operation of world-class, state-of-the-art scientific facilities; and the design and construction of new facilities. Further, Science activities support the **President's Management Agenda** by integrating budgeting and performance evaluation, expanding electronic government, and the development and use of new investment criteria for evaluating basic research in the FY 2004 budget cycle.

The **High Energy Physics** (HEP) program conducts basic research on the nature of matter and energy at its most fundamental level. Particle physics seeks to understand the universe by investigating the basic constituents of matter and the forces binding them together. The research program is primarily carried out at the two major scientific facilities: **Tevatron at Fermilab** in Batavia, Illinois, and **Stanford Linear Accelerator Center** in California. The DOE is participating in the construction of the **Large Hadron Collider** in Switzerland. The HEP program also funds a program of non-accelerator physics that investigates dark energy, supernovae, solar neutrinos, black holes, and other topics.

The **Nuclear Physics** (NP) program conducts research to understand the structure and interactions of atomic nuclei and the fundamental forces and particles of nature in nuclear matter. The NP program seeks to explain the structure and properties of nuclei and nuclear matter in terms of their fundamental constituents. The program funds two large flagship national user accelerator facilities, the Continuous Electron Beam Accelerator Facility at **Thomas Jefferson National Accelerator Facility** in Newport News, Virginia, and the **Relativistic Heavy Ion Collider** at

User (... facility): **5**
(ASCR, NP, BES)

Word count:
University (facility): **1**
(NP)

IN SIX PAGES OF TEXT!

<http://www.cfo.doe.gov/budget/04budget/highlite/highlite.pdf>

An outcome:

AIP FYI #31: Reaction to Bush S&T Budget, March 3, 2003:

“...there's much to cause distress as well – like ... flat funding for the Department of Energy (DOE) Office of Science... the concern expressed for the physical sciences in the budget reminds me a little bit of the old joke about the will that said,

‘To Joe, who I said I would mention in my will, “Hello, Joe.”
Sympathy won't fund labs’ -- Sherwood Boehlert (R-NY)

Projects require university personnel as well as facilities

A good sign:

From Dr. Orbach's HEP Facilities Charge Letter:

For more than a half-century the Department of Energy's Office of Science has envisioned, designed, constructed and operated many of the premiere scientific research facilities in the world. More than 17,000 researchers and their students from universities, other government agencies, private industry and from abroad use Office of Science facilities each year—and this number is growing.

Dec 18, 2002

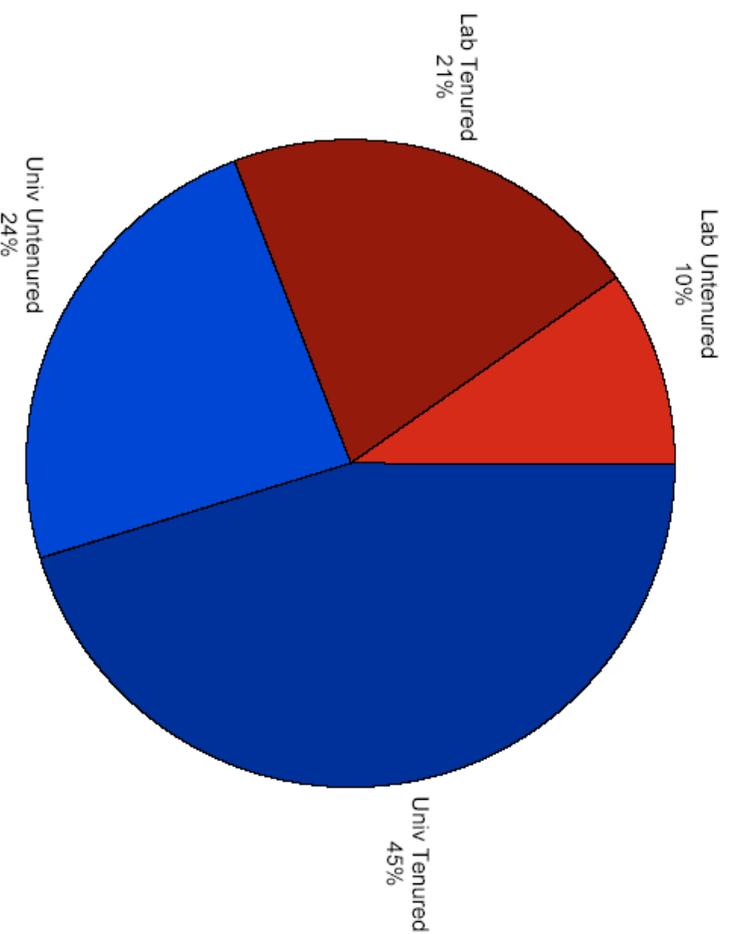
Physics Opportunities vs. Manpower

- **We are at a challenging point in our history:**
 - **promising ongoing programs:** SLAC & FNAL, Non-accelerator Physics
 - and
 - the increasingly important need to mobilize to **exploit extraordinary new physics opportunities** the LHC and elsewhere
- **We need to realize the physics potential of the ongoing program, while ramping up the program of the future.**
- **How do we reconcile these competing manpower requirements?**

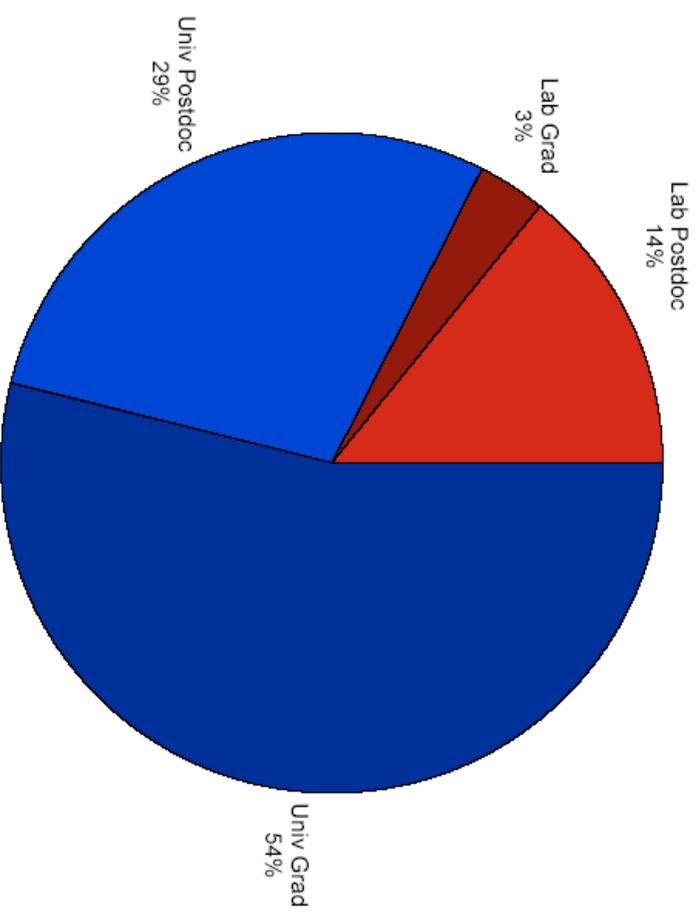
Create a Personnel Budget

2002 Census (cf. Talk by Helen Quinn) **red=lab**, **blue=univ**.

Faculty:



Postdocs/Students:



Pleas: What can HEPAP do now?

- Emphasize importance of University-based portion of program in all written communication
- Create a personnel “budget”: provide balance to the facility-based view of the program

These actions don't require money!