PHYSICS RESEARCH UNIVERSITY PROGRAM

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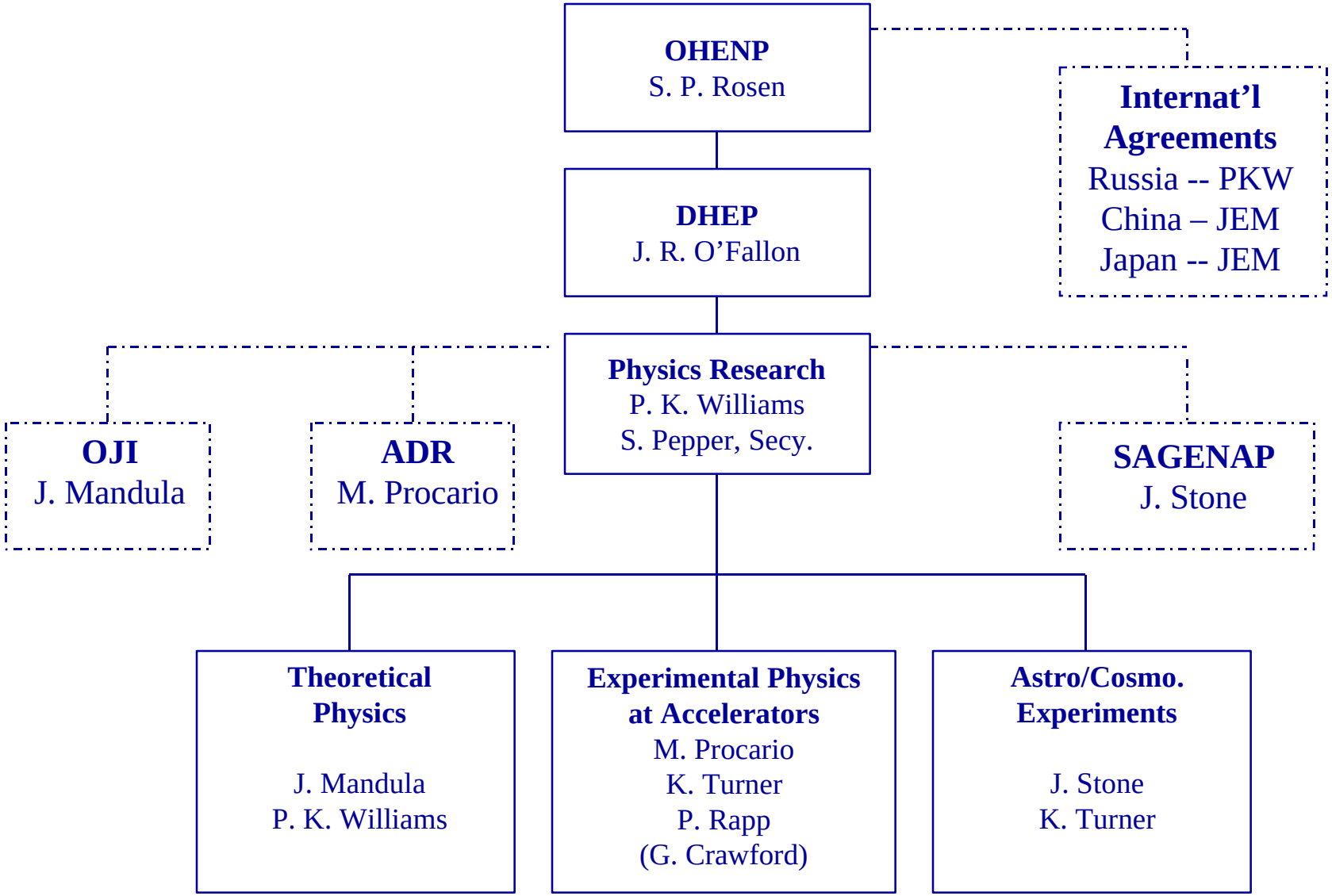
U.S. Department of Energy

Presentation to HEPAP

July 13, 2001

Division of High Energy Physics

Physics Research University Program



University Program
General Features

102 Universities (75 E, 68 T, 32 N)
236 Groups (127 E, 73 T, 36 N)

E = Experimental (Accelerator Related) T = Theoretical N = Non-Accelerator Related

See Kathy Turner's talk

Laboratory Augmentation

Fermilab	AUGER, CDMS
LBNL	CDMS, KamLAND, SNAP
SLAC	GLAST
LANL	T-8, MILAGRO, Super-K
LLNL	BaBAR, AXIONS
ORNL	SHIELDING

OJI Program (Jeff Mandula)- see Kathy Turner's talk
Advanced Detector Research Program (Mike Procario)- see Mike Procario's talk
SBIR Detector R&D (Mike Procario)
Non-Accelerator Program: Astrophysics, Cosmology (Jim Stone, Kathy Turner)
EPO: QUARKNET, New Dimensions…(Kathy Turner)
EPSCoR (Pat Rapp)

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Physics Research/University Program ($M)

FY 1999	FY 2000	FY 2001	FY 2002 (PRB)
$102.2	$107.9	$109.249	$103.426
	- 0.3 Omnibus Reduction	-.240 Recission	
	$107.6	$109.009	

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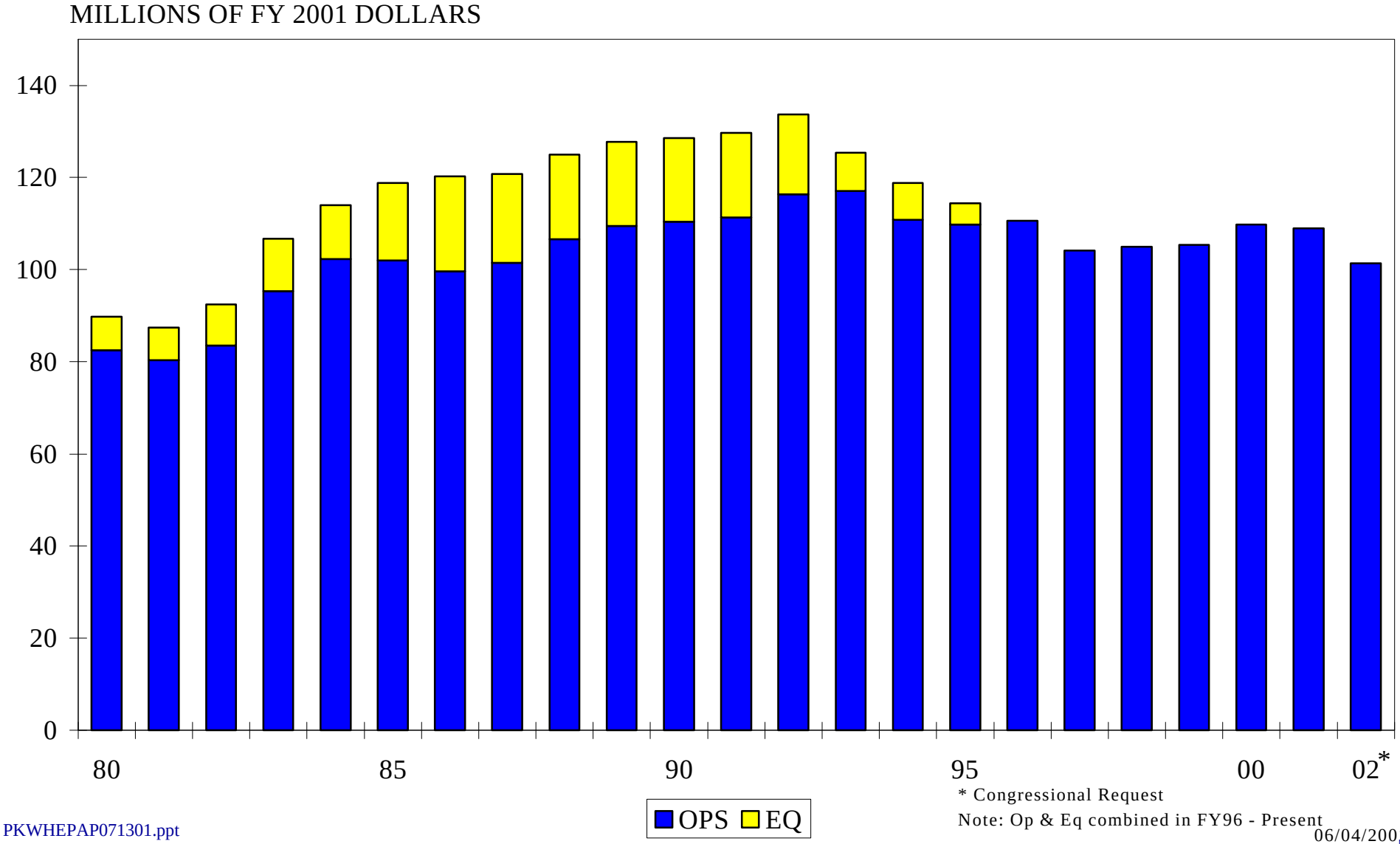
Physics Research University Program



* Congressional Request

Note: Op & Eq combined in FY96 - Present

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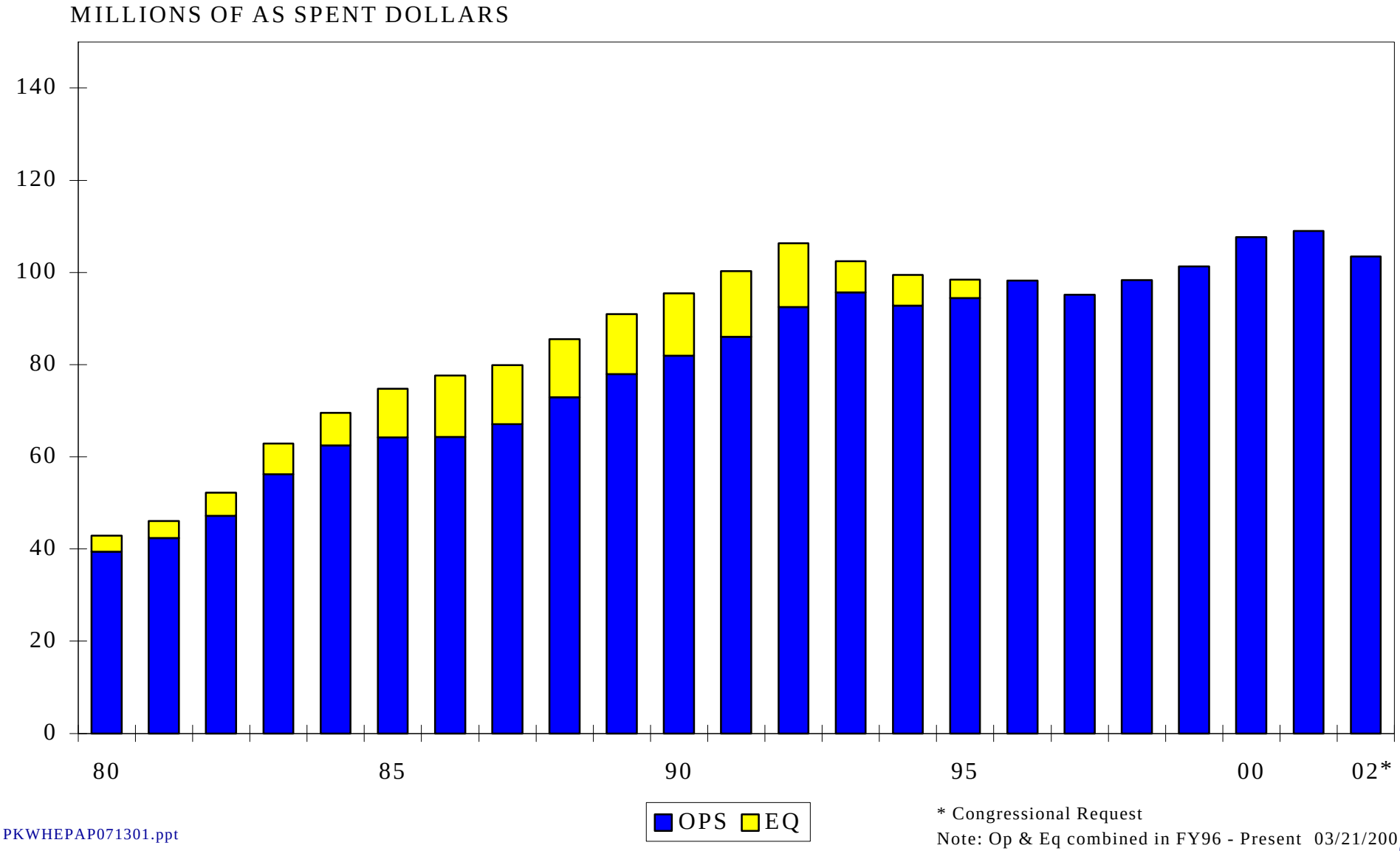
Physics Research University Program



* Congressional Request

Note: Op & Eq combined in FY96 - Present

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as of 6/28/01

FY01

DOE-funded FTE's in

HEP University Program

(% Change since FY92)

Program	# faculty	#postdocs/research scientists	#grad students	**TOTAL**
Theory	225 (-17%)	110 (-16%)	116 (-37%)	451
Experiment Accelerator Base	284 (-3%)	332 (+28%)	312 (-26%)	928
Experiment Not Accelerator based	35 (-8%)	36 (-14%)	35 (-24%)	106
TOTAL	544 (-10%)	478 (+10%)	463 (-30%)	1485 (-12%)

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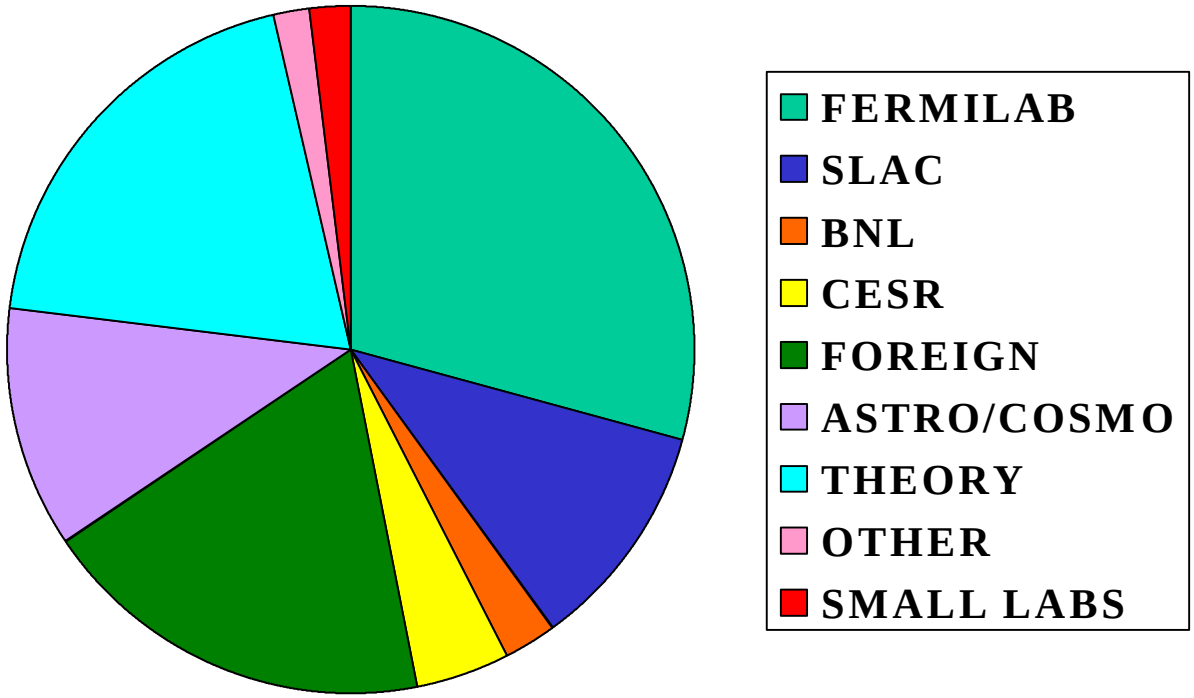
Physics Research University Program
Distribution Totals



Physics Research University Program Distributions

- High Priority Experiments (-2%)
  - Fermilab Collider 21%
  - BaBar 14%
- Priority Experiments (–4%)
  - LHC 10%
  - NUMI/MINOS/MINIBOONE 3%
- Other Experimental Activities (-8%)
  - Other Accelerator Experiments 17%
  - Non-Accelerator Experiments 15%
- Theory (-8%) 20%

100%

Physics Research/University Program ($M)

	FY 2001 ($M)
University Base	$ 94.9
1-Shot	1.9
Eq/App	5.2
NLC R&D postdocs	0.4
AMS Help	0.5
LHC Help	0.6
LHC Comp/Software	1.3
Small Lab Programs	1.2
Big Labs	0.2
LSA's	1.9
ADR	0.4
OJI	0.5
	$109.0

Physics Research/University Program

FY 2001 Apparatus/ Detector R&D

	($M)
ADR	0.41
MiniBoone	0.26
Spin@ U-70	0.06
Teraflop R&D	0.25
CDMS	1.10
KamLAND	0.55
SNAP R&D	* 1.40
GLAST/Inc.	* 1.30
AMS EQ	* 1.23
Super-K	0.30
EXO R&D	0.05
Icarus	0.05
VERITAS R&D	0.50
Comp./Misc.	1.58
TOTAL	* $9.04

* Includes $3.43M from DHEP for SNAP, GLAST, AMS

Non-Accelerator-based Astrophysics and Cosmology Experiments

Recent Developments:

- Many interdisciplinary approaches to issues in particle physics, astrophysics, and cosmology emerging.
- Trend towards larger-scale efforts from underground/ice/sea to ground level, to space.
- National Laboratories involved in many projects – scientific personnel, technical expertise, engineering, and project management.
- Interagency cooperation increasing.

General Topics:

Neutrino Oscillations – Atmospheric, Solar, Reactor
Neutrino-less Double Beta Decay
Dark Energy from Distant Supernova studies
Dark Matter Searches (WIMPs, Axions, Highest Energy Cosmic Rays (EAS, Air Fluorescence)
High Energy Gamma Rays, Gamma Bursters
UHE Neutrinos

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Projects in Non-Accelerator Physics

ON-GOING:

Soudan II (Analysis)
MACRO (Analysis)
Milagro (w/NSF)
GRANITE
SNO (Mostly NP)
SDSS (FNAL only)
SuperK/K2K
AMANDA-II (LBNL/NSF)
SAGE (LANL/NP)
Axion-I (LLNL)

UNDERWAY:

Pierre Auger (w/NSF)
KamLAND (w/NP)
GLAST (w/NASA)
CDMS-II (w/NSF)
AMS(w/NASA)

PENDING STARTS:

VERITAS (w/NSF, SAO)
AXION-II (w/NSF)

R&D

SNAP (LBNL, Michigan)
EXO(SLAC, Stanford)