

DPF Town Hall Business Meeting

February 15 , 2010

At APS meeting

DPF EC: Chip Brock, Pierre Ramond, Patricia McBride, Alice Bean, Ritchie Patterson, David Saltzberg, Kara Hoffman

Guest: Dennis Kovar (DOE), Jim Reidy (NSF), Sarah Eno (Univ. of Maryland), Young-Ke Kim (FNAL/Univ. of Chicago)

A total of 36 people attended the meeting

Agenda and minutes

1. Welcome and Introductions (Chip Brock)

The Executive committee was introduced and the previous executive committee was thanked for their service.

2. Discussion with Dennis Kovar from the Office of High Energy Physics in DOE and Jim Reidy from Elementary Particle Physics in the Division of Physics in the NSF

Dennis Kovar's slides can be found at the end of the minutes. He provided information on the FY10 and FY11 budgets for DOE. He discussed the three frontiers: Energy, Intensity, and Cosmic and the efforts there. Delays in the LHC are affecting the program as there was a \$9M reduction in funding in 2009. The DOE is in partnership with the NSF, has received guidance from the Particle Astrophysics Study Advisory Group called by HEPAP, and is waiting for the Astro 2010 survey which is expected to provide their report during the summer of 2010. He presented the FY2011 projects and discussed other program activities including the early career awards.

Jim Reidy was reporting for the NSF which has three programs that fund high energy physics (HEP): Elementary Particle Physics (EPP), Particle and Nuclear Astrophysics, and Theory. There was a total of \$142M in funding to HEP in FY09 including \$54M to universities. He couldn't discuss the FY10 budget for these three programs as it must be approved by Congress. It appears that the NSF is on a doubling track from the past few years, but this hasn't translated to HEP. He plans for a flat budget. Last years recovery funding was spent in one shot and funded the full three years of grants. Thus in FY12, there will be a spike that needs to be smoothed out if no new funding comes in. He also discussed the DUSEL program which will put pressures on other parts of the program in the future.

Questions for both Kovar and Reidy included:

- How can HEP recover from LHC delays? Answer: Publish results
- What is the schedule for DUSEL? Answer: Can't specify it at this time.
- How are you responding to P5 Roadmap? Kovar: We are beginning to implement the long term campaigns. The highest priority is to build the intensity frontier community.

- Reidy: The P5 document is the plan and in NSF, funding is driven by proposals.
- For the energy frontier, we are concerned about National leadership, how can we recover that vision? Kovar: We can't afford the next machine so accelerator R&D program is essential. The U.S. is putting more money in linear collider R&D in comparison to other countries so there isn't a loss of focus.

3. DPF Business Meeting

a. 2009 APS Fellows Recognition

The fellows present were given a certificate. The 2009 fellows in the DPF are: **Babu, Kaladi S.** - Oklahoma State University, **Diwan, Milind** - Brookhaven National Laboratory, **Eno, Sarah C.** - University of Maryland, **Gutierrez, Gaston R.** – Fermilab, **Heinemann, Beate** -University of California, Berkeley, **Heintz, Ulrich** - Boston University, **Karle, Albrecht** - University of Wisconsin, Madison, **Landsberg, Greg L.** - Brown University, **Linnemann, James T.** - Michigan State University, **Luke, Michael** - University of Toronto, **McBride, Patricia L.** – Fermilab, **Plunkett, Robert K.** – Fermilab, **Qian, Jianming** - University of Michigan, **Taylor, Tomasz R.** - Northeastern University, **Tomboulis, E. Terry** -University of California, Los Angeles, **Winer, Brian L.** -Ohio State University, **Wood, Darien R.** - Northwestern University

b. The 2010 Mitsuyoshi Tanaka Dissertation Award in Experimental Particle Physics Recipient: Tingjun Yang of Stanford University was introduced by his Ph.D. advisor Professor Stanley Wojcicki and recognized.

c. Topics under consideration within the DPF Executive Committee (Chip Brock)

There will be a DPF meeting every other year starting in 2011 near the time of the Lepton/Photon conference.

The working subcommittees are:

- Newsletter (chaired by David Saltberg)– it was agreed that an electronic copy of the newsletter was acceptable,
- Nomination (chaired by Casaba Csaki)
- Prizes and Awards – The DPF sponsors: the J.J. Sakurai Prize for Theoretical Particle Physics, the W.K.H. Panofsky Prize in Experimental Particle Physics, the Mitsuyoshi Tanaka Dissertation award in experimental particle physics, and with DPP cosponsors the Robert R. Wilson Prize for Achievement in the physics of particle accelerators. Members of the prize committees are being sought presently.

The EC is looking into putting together a public speaking team of about 20 people and organizing an effort to publish every other year “the status of particle physics”.

d. Report from the Secretary/Treasurer (Alice Bean)

The December, 2009 balance is \$161K. The 2009 income was \$32,628 from APS dues, April Meeting share, and allocated investment income. The 2009 expenses were \$33,693. So far in 2010, we are supporting 40 students, each for \$300 to attend the APS April meeting for presentations.

4. HEPAP Task Force on University Issues (Sarah Eno)

She reviewed the work that was presented at the October, 2009 HEPAP meeting <http://www.er.doe.gov/hep/agendas/HEPAPAgendaOct2009.shtml> from the HEPAP Informal Working Group on the HEP University Program. She summarized the charge and makeup of the group and their work during 2009. Demographic data was collected from NSF and DOE. A survey on experimental technical infrastructure was undertaken and the results presented to HEPAP. During the HEPAP presentation in October, the agencies gave further information in response to the Universities subpanel report http://www.er.doe.gov/hep/panels/reports/hepap_reports.shtml

5. Detector R&D Workshop (Young Kee Kim – FNAL)

See slides at end of minutes. There will be a DOE detector R&D review at FNAL in July 2009. Some issues that are identified to look into include strategic planning. A workshop would be a good way of doing this. The workshop is planned for late summer and will be co-sponsored by DPF. The goals of the workshop were presented.

There was a discussion after her talk of also organizing a school for detector technology.

6. Open Discussion

There were no additional topics brought up.

END Minutes

Alice Bean



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
SCIENCE

Office of High Energy Physics

DPF Town Meeting
February 15, 2010

Dennis Kovar

Associate Director for the Office of High Energy Physics
Office of Science, U.S. Department of Energy

SC Budget Overview

Office of Science (SC) FY 2011 Budget Request to Congress

Office of Science FY 2011 Request is a +6.1% increase compared to FY 2010 Appropriations

HEP FY 2011 Request is a +2.3% increase over FY 2010 Appropriations

(B/A in thousands)

| | FY 2009 | | FY 2010 | FY 2011 | | |
|---|----------------------|----------------------|------------------|---------------------|---|--------------|
| | Current Base Approp. | Current Recovery Act | Current Approp. | Request to Congress | Request to Congress vs. FY 2010 Approp. | |
| Advanced Scientific Computing Research..... | 358,772 | 161,795 | 394,000 | 426,000 | +32,000 | +8.1% |
| Basic Energy Sciences..... | 1,535,765 | 555,406 | 1,636,500 | 1,835,000 | +198,500 | +12.1% |
| Biological & Environmental Research..... | 585,176 | 165,653 | 604,182 | 626,900 | +22,718 | +3.8% |
| Fusion Energy Sciences..... | 394,518 | 91,023 | 426,000 | 380,000 | -46,000 | -10.8% |
| High Energy Physics..... | 775,868 | 232,390 | 810,483 | 829,000 | +18,517 | +2.3% |
| Nuclear Physics..... | 500,307 | 154,800 | 535,000 | 562,000 | +27,000 | +5.0% |
| Workforce Development for Teachers & Scientists..... | 13,583 | 12,500 | 20,678 | 35,600 | +14,922 | +72.2% |
| Science Laboratories Infrastructure..... | 145,380 | 198,114 | 127,600 | 126,000 | -1,600 | -1.3% |
| Safeguards & Security..... | 80,603 | — | 83,000 | 86,500 | +3,500 | +4.2% |
| Science Program Direction..... | 186,695 | 5,600 | 189,377 | 214,437 | +25,060 | +13.2% |
| Small Business Innovation Research/Technology Transfer (SC)..... | 104,905 | 18,719 | — | — | — | — |
| Subtotal, Science..... | 4,681,572 | 1,596,000 | 4,826,820 | 5,121,437 | +294,617 | +6.1% |
| Congressionally-directed projects..... | 91,064 | — | 76,890 | — | -76,890 | -100.0% |
| Small Business Innovation Research/ Technology Transfer (DOE)..... | 49,534 | 36,918 | — | — | — | — |
| Use of prior year balances..... | -15,000 | — | — | — | — | — |
| Total, Office of Science..... | 4,807,170 | 1,632,918 | 4,903,710 | 5,121,437 | +217,727 | +4.4% |

SC Budget Overview

Office of Science FY 2011 Investment Highlights

The FY 2011 budget advances discovery science and invests in science for national needs in energy, climate, and the environment; national scientific user facilities; and education and workforce development.

Discovery science addressing national priorities

- Energy Innovation Hub for Batteries and Energy Storage (+\$34,020K, BES)
- Enhanced activities in climate science and modeling (Regional and Global Climate Modeling, +\$6,495K; Earth System Modeling, +\$9,015K; Atmospheric System Research, +\$1,944K; ARM Climate Research Facility, +\$3,961K; BER)
- Individual investigator, small group, and Energy Frontier Research Centers (EFRCs) in areas complementing the initial suite of 46 EFRCs awarded in FY 2009 (+\$66,246K, BES)
- Leadership Computing Facilities operations and preparation for next generation of computer acquisitions for S&T modeling and simulation (\$34,832K, ASCR)
- Multiscale modeling of combustion and advanced engine systems (+\$20,000K, BES)

Scientific user facilities—21st century tools of science, technology, and engineering

- Facility construction is fully funded; projects are meeting baselines
- 28 scientific user facilities will serve more than 26,000 users
- Several new projects and Major Items of Equipment are initiated (e.g., the Long Baseline Neutrino Experiment, +\$12,000K, HEP)

Education and workforce development

- Expansions of the SC Graduate Fellowship Program (+\$10,000K, 170 new awards, WDTS) and the SC Early Career Research Program (+\$16,000K, 60 new awards, funded in all of the SC research programs)

HEP Budget Overview

HEP FY 2011 Budget Request

FY 2011 Request is a +2.3% increase compared to FY 2010 Appropriation

FY 2010 Appropriations were a +1.9% increase over FY 2009 Appropriations

(dollars in thousands)

| | FY 2009 Current Appropriation | FY 2009 ** Recovery Act Appropriations | FY 2010 Current Appropriations | Delta | FY 2011 Request | Percent |
|--|-------------------------------------|--|--------------------------------------|-------|--------------------|---------|
|--|-------------------------------------|--|--------------------------------------|-------|--------------------|---------|

High Energy Physics

| | | | | | | |
|--------------------------------------|------------------|------------------|----------------|---------------|----------------|-------------|
| Proton Accelerator Based Physics | 401,368 | 107,990 | 434,167 | 5,095 | 439,262 | 1.2% |
| Electron Accelerator Based Physics | 32,030 | 1,400 | 27,427 | -2,720 | 24,707 | -9.9% |
| Non Accelerator Based Physics | 101,138 | 4,445 | 99,625 | -11,086 | 88,539 | -11.1% |
| Theoretical Physics | 66,148 | 5,975 | 66,962 | 2,562 | 69,524 | 3.8% |
| Advanced Technology R&D | 195,042 * | 116,690 * | 182,302 | 7,666 | 189,968 | 4.2% |
| Subtotal, High Energy Physics | 795,726 | 236,500 | 810,483 | 1,517 | 812,000 | 0.2% |
| Construction | 0 | 0 | 0 | 17,000 | 17,000 | |
| Total, High Energy Physics | 795,726 * | 236,500 * | 810,483 | 18,517 | 829,000 | 2.3% |

1.90%

** The Recovery Act Current Appropriation column reflects the allocation of funding as of September 30, 2009.

* Total includes SBIR/STTR: \$17,730,000 of which was transferred to the Small Business Innovation Research (SBIR) program and \$2,128,000 of which was transferred to the Small Business Technology Transfer (STTR) program.

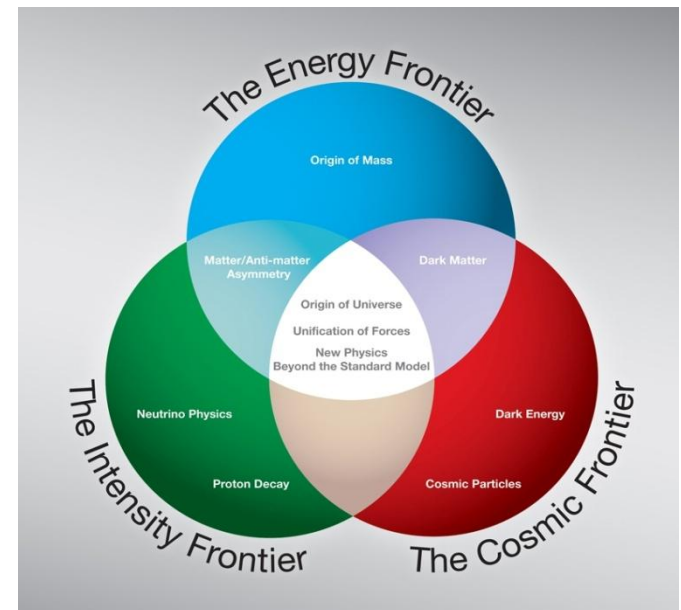
HEP Overview

HEP Strategic Plan

The HEP program is pursuing a long-range plan [developed with input from the scientific community (HEPAP)] to maintain a leadership role for the U.S. at the three scientific frontiers that define the field.

The main elements of this plan are to:

- maintain a strong, productive university and laboratory research community
- enable U.S. leadership roles in the Tevatron and LHC programs at the Energy Frontier
- achieve the vision of a world-leading U.S. neutrino and rare decay program at the Intensity Frontier, building on the existing accelerator infrastructure at Fermilab
- deploy selected, high-impact experiments at the Cosmic Frontier
- support accelerator R&D to position the U.S. to be at the forefront of advanced technologies for next-generation facilities.



Need to design and construct new research capabilities, while maintaining a world-leading scientific program and supporting targeted long-range R&D for the future.

FY 2011 Program Highlights

Energy Frontier

- Tevatron will operate in FY 2011 (possibility of discovery or ruling out over a significant fraction of the allowed mass region for the Higgs boson in the Standard Model at the 95% confidence level).
- U.S. LHC program is supported (at a level that will allow U.S. researchers to play an leading role in extracting physics from the data obtained and in planned upgrades).

Intensity Frontier

- On-going MIE projects (NOvA and Daya Bay) are supported on planned schedules
- First investments (MicroBooNE, Mu2e and LBNE) for next generation U.S. leadership program

Cosmic Frontier

- Support ongoing programs (e.g.; Fermi, AMS, VERITAS, Piere Auger, BOSS, CDMS, COUPP, LUX, ADMX)
- On-going MIE projects (DES) are supported on planned schedules
- R&D for possible future experiments (guidance from HEPAP(PASAG))

Core Research

- EPP Research supported at a level that will maintain scientific workforce and the ability to be productive
- Advanced Technology R&D supports high risk, high impact initiatives , development of infrastructure and core competencies important for the U.S.

FY 2011 Budget Breakout of Funding

**Facility Operations remain about the same
Core Research and Projects grow**

| HEP Functional Categories | <u>FY 2009</u> | FY 2009 ARRA | <u>FY 2010</u> | Delta | <u>FY 2011 Request</u> | vs FY10 |
|---|----------------|-----------------|----------------|-------|----------------------------|---------|
| Fermilab Accelerator Complex Operations | 162.8 | 15.0 | 156.5 | -1.4 | 155.1 | -0.9% |
| LHC Detector Support/Operations | 69.4 | 0.0 | 71.2 | 3.6 | 74.8 | 5.1% |
| SLAC Accelerator Complex Operations | 15.3 | 0.0 | 12.1 | -2.3 | 9.8 | -19.0% |
| Facility Operations | 247.5 | 15.0 | 239.7 | -0.1 | 239.6 | 0.0% |
| EPP Research | 284.5 | 24.8 | 286.3 | 10.9 | 297.1 | 3.8% |
| Advanced Technology R&D | 167.2 | 78.9 | 162.6 | 4.1 | 166.7 | 2.5% |
| Core Research | 451.7 | 103.7 | 448.9 | 15.0 | 463.9 | 3.3% |
| Intensity Frontier Projects | 47.7 | 55.0 | 72.8 | 5.4 | 78.3 | |
| Energy Frontier Projects | 2.5 | 0.0 | 9.0 | 0.3 | 9.3 | |
| Cosmic Frontier Projects | 10.9 | 0.0 | 10.1 | -6.1 | 4.0 | |
| Technology Projects | 8.0 | 33.7 | 0.0 | 3.2 | 3.2 | |
| Projects | 69.1 | 88.7 | 92.0 | 2.8 | 94.7 | 3.0% |
| Other (GPP/GPE/SBIR/STTR) | 27.5 | 29.1 | 29.9 | 0.9 | 30.8 | 2.9% |
| High Energy Physics | 795.7 | 236.5 | 810.5 | 18.5 | 829.0 | 2.3% |

FY 2011 Budget Projects

| HEP Projects (MIEs and Construction) | FY 2009 | FY 2009 ARRA | FY 2010 | Delta | FY 2011 Request | vs FY10 |
|---|-------------|-----------------|-------------|-------|--------------------|---------|
| Project - NOvA - MIE | 27.8 | 55.0 | 59.0 | -12.8 | 46.2 | |
| Project - Minerva - MIE | 4.9 | 0.0 | 0.8 | -0.8 | 0.0 | |
| Project - MicroBooNE - MIE | 0.0 | 0.0 | 2.0 | 6.0 | 8.0 | |
| Project - Mu2e - Construction (Ops & TEC) | 0.0 | 0.0 | 0.0 | 10.0 | 10.0 | |
| Project - T2K - MIE | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Daya Bay - MIE | 14.0 | 0.0 | 11.0 | -8.9 | 2.1 | |
| Project - LBNE - Construction (Ops & TEC) | 0.0 | 0.0 | 0.0 | 12.0 | 12.0 | |
| Intensity Frontier Projects | 47.7 | 55.0 | 72.8 | 5.4 | 78.3 | 7.5% |
| LHC Accelerator Upgrade - APUL - MIE | 2.5 | 0.0 | 9.0 | 0.3 | 9.3 | |
| Energy Frontier Projects | 2.5 | 0.0 | 9.0 | 0.3 | 9.3 | 2.8% |
| Project - DES - MIE | 9.9 | 0.0 | 8.6 | -4.6 | 4.0 | |
| Project - Super CDMS - MIE | 1.0 | 0.0 | 1.5 | -1.5 | 0.0 | |
| Cosmic Frontier Projects | 10.9 | 0.0 | 10.1 | -6.1 | 4.0 | -60.4% |
| FACET | 0.0 | 14.5 | 0.0 | 0.0 | 0.0 | |
| Project - SRF Electron Beam Welder - MIE | 0.0 | 0.0 | 0.0 | 3.2 | 3.2 | |
| Project - BELLA - MIE | 8.0 | 19.2 | 0.0 | 0.0 | 0.0 | |
| Technology Projects | 8.0 | 33.7 | 0.0 | 3.2 | 3.2 | |
| Total, HEP Projects | 69.1 | 88.7 | 92.0 | 2.8 | 94.7 | 3.0% |

Some Program Activities

Early Career Awards

- Funding of \$16M provided in FY 2009 ARRA (for 4 laboratory and 10 university 5-year awards)
- Coordinated/ managed at Office of Science (SC) level
- Steady state funding of ~\$16M will be established for such awards in out-years

HEPAP

- HEPAP (PASAG) Report provided guidance on opportunities and priorities in particle astrophysics
- HEPAP will be charged in FT 2010 to examine and evaluate the operations of the DOE SC HEP Office

Office of HEP

- Still open federal positions in HEP (Theory, Computational HEP, etc.)
- Need for IPAs / Detailees (present appointments are coming to an end)
- Input from Accelerator Workshop needs to be utilized in establishing new strategic plan for and reorganization of HEP Accelerator Science/R&D program to address that plan

HEP Early Career Program

- **Supersedes HEP Outstanding Junior Investigator (OJI) program**
 - About 150 proposals (about 3x typical OJI pool).
- **Breakdown of proposals:**

| | Experiment | Theory | Total |
|------------|------------|--------|-------|
| Lab | 41 | 6 | 47 |
| University | 64 | 43 | 107 |
| Total | 105 | 49 | 154 |

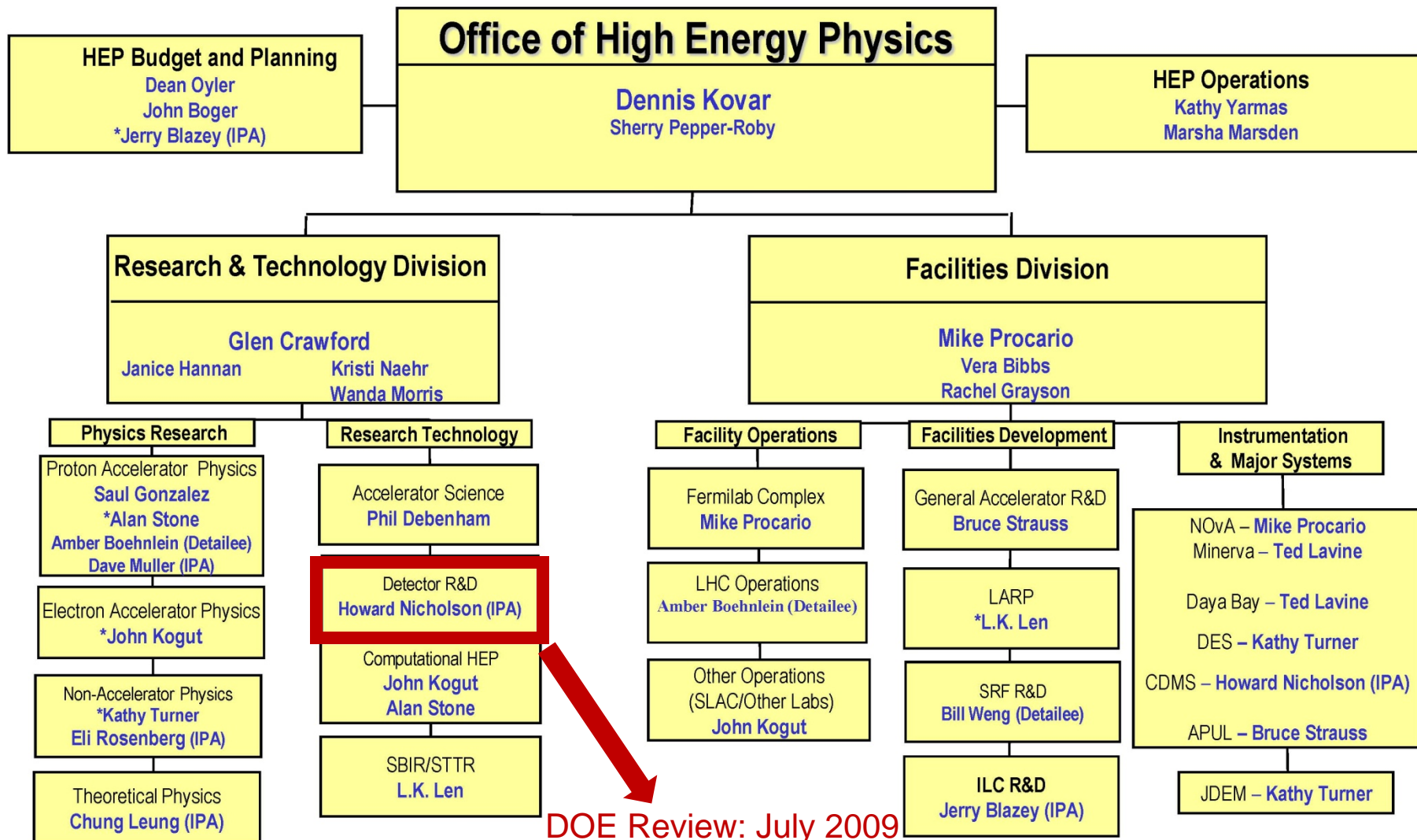
- **Three HEP panels: Lab Experiment, Univ. Experiment, Theory. Panels met in early December.**
- **6 theory awards (49 proposals):**
 - Spanning research frontiers but mostly focused on LHC physics
- **8 experiment (105 proposals):**
 - 3 Energy Frontier; 3 Intensity Frontier; 2 Cosmic Frontier; 1 Accelerator R&D
- **3 women; 11 men**
- **6 East ; 4 Midwest; 4 West**
- **Evenly distributed in year since PhD (see next slide)**
 - *NB: there are no HEP EC proposals from very recent PhDs because they are all still post-docs...*

Workshop on Detector R&D

Chip Brock (Michigan State University)
Young-Kee Kim (Fermilab / U. of Chicago)

DPF Town Meeting
APS April Meeting, Feb. 15, 2010

HEP Organization Chart



DOE Review: July 2009

ANL, BNL, FNAL, LBNL, SNAL

*Denotes base position

Outcome of the July 2009 DOE Review

- Need to look into
 - Whether there is any duplicated effort
 - broader collaboration among the labs
 - Involvement of universities
 - availability of test beams
 - strategic, coherent planning of detector R&D
 - education/training of the new generation of “experimental” particle physicists
- Workshop could be a tool!
 - Initial work done by H. Weerts (ANL), C. Thorn / L. Littenberg (BNL), G. Gilchriese (LBNL), D. MacFarlane (SNAL), P. Wilson / D. Demarteau (FNAL), ...

Tentative goals of this (1st) workshop

- It should act as a review of what R&D is going on at the labs and the universities, and serve to inform everyone and provide an opportunity for participants to learn about the areas of detector R&D.
- It should be the start of defining an overall larger strategic structure for the investment in detector R&D.
- It is not expected that this will initially lead to an expansion of the detector R&D.
- Another important aspect is the retention of technically skilled people, and the education/training of the next generation of particle experimentalists
- Developing a partnership between universities and laboratories in detector R&D and possibilities of sharing lab infrastructure.

Current plan (still tentative) on Workshop

- Co-sponsored by DPF and Fermilab
- Planning committee membership:
 - 50% from universities & 50% from laboratories
 - To be determined
- Time: Summer, 2010
 - Exact dates: to be determined
- Location: Fermilab