U.S. DEPARTMENT OF ENERGY
Office of Science

DOE ARRA/FY09/FY10 Budget & OHEP News

HEPAP Meeting

May 21-22, 2009
Washington, D.C.

Dennis Kovar
Associate Director of the Office of Science
for High Energy Physics

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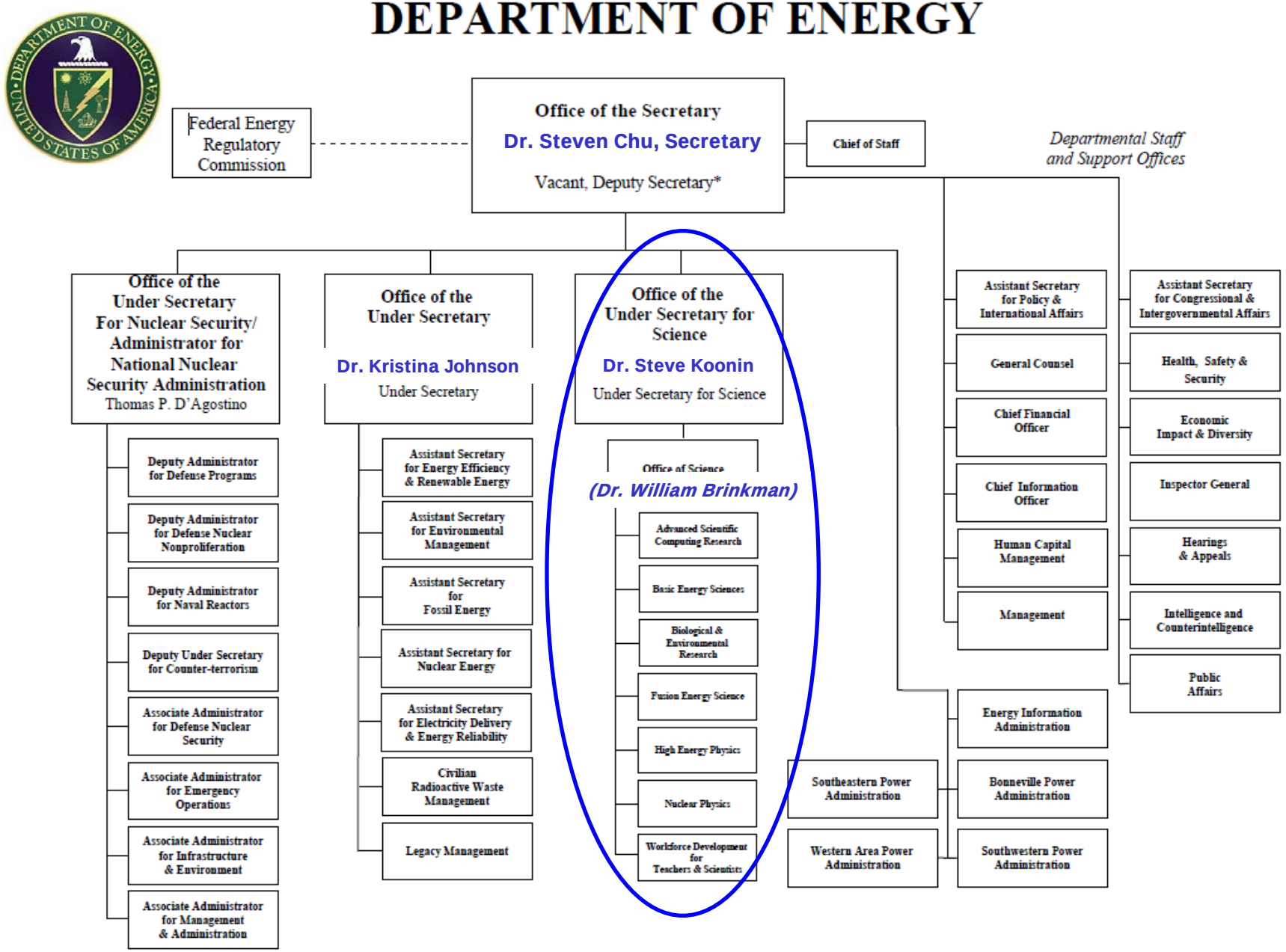
New Leadership



* The Deputy Secretary also serves as the Chief Operating Officer

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Last Meeting: The Budget Challenge

Three fiscal years and one stimulus bill in play:

- **FY 2009 American Recovery and Reinvestment Act (ARRA)**
  - **$1.6B for DOE Office of Science**
- **FY 2009 Appropriations**
  - **Continuing Resolution or President's Request?**
- **FY 2010 Congressional Request**
  - **Not formally submitted to OMB. Internal discussions only**
- **FY 2011**
  - **In Planning stages**

I can't talk about any of these!

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This Meeting: The Budget Challenge

Three fiscal years and one stimulus bill in play:

- **FY 2009 American Recovery and Reinvestment Act (ARRA)**
  - **Feb 17th, $236.5M for HEP, spending quickly the challenge!**
- **FY 2009 Appropriations**
  - **March 11th, $795.7M for HEP**
- **FY 2010 Congressional Request**
  - **Rolled out May 7th, $819M for HEP**
- **FY 2011**
  - **In Planning stages**

I can talk about some of these!

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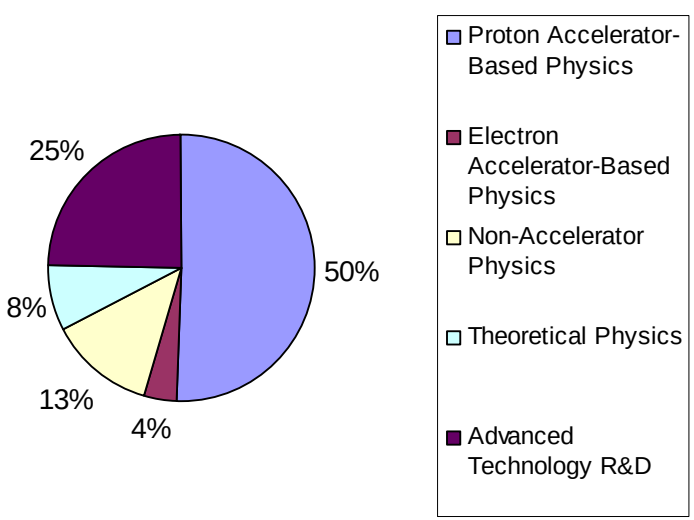
HEP FY2009 Program Overview

Subprograms	(millions) FY 2009
Proton Accelerator-Based Physics	402.5
Electron Accelerator-Based Physics	31.0
Non-Accelerator Physics	100.9
Theoretical Physics	64.8
Advanced Technology R&D	196.6
High Energy Physics Total	795.7



Research Statistics	FY 2009 estimate
# University Grants	200
# Laboratory Groups	45
# Permanent Ph.D.'s (FTEs)	1,135
# Postdoctoral Associates (FTEs)	550
# Graduate Students (FTEs)	595
# Ph.D.'s awarded	110

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FY2009 Budget: Category "Slice"

HEP Budget Categories	FY 2007	FY 2008	vs FY08	FY 2009	vs FY08	vs FY07
Proton Accelerator-Based Research	110.0	122.9	2.9	125.7	2.3%	14.3%
Proton Accelerator-Based Facilities	233.6	248.8	27.9	276.7	11.2%	18.5%
Proton Accelerator-Based Physics	**343.6**	**371.7**	30.8	**402.5**	8.3%	17.1%
Electron Accelerator-Based Research	22.3	20.7	-4.2	16.5	-20.3%	-26.0%
Electron Accelerator-Based Facilities	79.0	36.5	-22.0	14.5	-60.3%	-81.7%
Electron Accelerator-Based Physics	**101.3**	**57.2**	-26.2	**31.0**	-45.8%	-69.4%
Non-Accelerator Physics	**60.7**	**75.8**	25.1	**100.9**	33.1%	66.3%
Theoretical Physics	**59.1**	**60.0**	4.8	**64.8**	7.9%	9.6%
Accel Science	37.4	45.1	8.1	53.2	18.1%	42.2%
Accelerator Development	98.6	70.2	28.3	98.5	40.4%	0.0%
Detector Development	31.7	22.9	1.6	24.5	6.8%	-22.9%
Advanced Technology R&D	**167.7**	**138.1**	38.1	**176.2**	27.5%	5.1%
SBIR/STTR (2.8% of ops)	19.4	18.5	1.9	20.4	10.3%	5.4%
Advanced Technology R&D	**187.1**	**156.6**	40.0	**196.6**	25.5%	5.1%
High Energy Physics Total	**751.8**	**721.3**	74.4	**795.7**	10.3%	5.8%

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FY2009 Budget: Functional "Slice"

HEP Functional Categories	FY 2007	FY 2008	vs FY08	FY 2009	vs FY08	vs FY07
Fermilab Accelerator Complex Operations	145.1	151.0	6.6	157.7	4.4%	8.7%
LHC Detector Support/Operations	56.8	65.6	6.4	71.9	9.7%	26.6%
SLAC Accelerator Complex Operations	79.0	36.5	-22.0	14.5	-60.3%	-81.7%
Facility Operations	**280.9**	**253.1**	-9.0	**244.1**	-3.6%	-13.1%
EPP Research	249.1	264.5	19.7	284.2	7.5%	14.1%
Advanced Technology R&D	167.7	138.1	30.1	168.2	21.8%	0.3%
Core Research	**416.8**	**402.6**	49.8	**452.4**	12.4%	8.5%
Project - NOvA	12.5	12.0	15.7	27.8		
Project - Minerva	4.0	7.2	-2.3	4.9		
Project - T2K	0.6	2.5	-1.5	1.0		
Daya Bay	1.0	6.9	6.1	13.0		
LHC Detectors	3.2	0.0	0.0	0.0		
LHC Accelerator Upgrade Phase I	0.0	0.0	2.5	2.5		
DES	1.4	5.5	3.2	8.7		
CDMS 25 MIE	0.0	0.0	1.0	1.0		
FACET	0.0	0.0	0.0	0.0		
BELLA	0.0	0.0	8.0	8.0		
Projects	**22.6**	**34.1**	32.7	**66.9**	96.0%	195.5%
Other (GPP/GPE/SBIR/STTR)	**31.5**	**31.5**	0.9	**32.4**	2.7%	2.9%
High Energy Physics	**751.8**	**721.3**	74.4	**795.7**	10.3%	5.8%

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FY2009 Program Status

- **The program was under some stress due to the continuing resolution but managed to maintain momentum due to**
  - **FY 2008 supplemental funding**
  - **Termination of B-Factory operations**
  - **Change in responsibilities for GPP**

- **Funding of the President's FY09 Request restores momentum and maintains projects:**
  - **Full Tevatron operations**
  - **LHC detector support issues addressed**
  - **Research programs to provide +2-3% over FY 2008 level**

- **FY 2009 supplemental requests being acted on now**
  - **ILC and SRF R&D support restored to manageable levels**
  - **Projects restored to baseline funding levels**
  - **NOvA had enough funds to stay on re-baselined schedule**

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FY2010 Request: Functional "Slice"

	FY 2007	FY 2008	FY 2009		FY 2010 Request	vs FY09	vs FY07
Fermilab Accelerator Complex Operations	145.1	151.0	157.7	0.9	158.5	0.5%	9.3%
LHC Support (Detectors / Accelerators)	56.8	65.6	71.9	-1.4	70.5	-2.0%	24.1%
Electron Based Facilities	79.0	36.5	14.5	-2.4	12.1	-16.7%	-84.7%
Facility Operations	**280.9**	**253.1**	**244.1**	**-3.0**	**241.1**	**-1.2%**	**-14.2%**
EPP Research	249.1	264.5	284.2	2.8	287.0	1.0%	15.2%
Advanced Technology R&D	167.7	138.1	168.2	-5.7	162.5	-3.4%	-3.1%
Core Research	**416.8**	**402.6**	**452.4**	**-2.9**	**449.6**	**-0.6%**	**7.9%**
Project - NOvA	12.5	12.0	27.8	31.2	59.0		
Project - Minerva	4.0	7.2	4.9	-4.1	0.8		
Project - T2K	0.6	2.5	1.0	-1.0			
Daya Bay	1.0	6.9	13.0	-2.0	11.0		
LHC Accelerator Upgrade Phase I			2.5	13.5	16.0		
DES	1.4	5.5	8.7	-0.1	8.6		
CDMS 25 MIE			1.0	0.5	1.5		
FACET							
BELLA			8.0	-8.0	0.0		
Projects	**22.6**	**34.1**	**66.9**	**30.0**	**96.9**	**44.9%**	**328.3%**
Other (GPP/GPE/SBIR/STTR)	**31.5**	**31.5**	**32.4**	**-0.9**	**31.4**	**-2.9%**	**-0.1%**
High Energy Physics	**751.8**	**721.3**	**795.7**	**23.3**	**819.0**	**2.9%**	**8.9%**

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Comments on FY10 Program

- Full Tevatron Collider and NuMI Operations
- Support for LHC Ops and Accelerator Upgrade
  - Detector Upgrades TBD, review this summer
- BaBar in "intensive analysis" mode
- Maintain current projects on baseline schedule
- BELLA, FACET in construction
- To maintain Facility Ops and Projects, overall Research is held approximately flat
  - ARRA Early Career, University Infrastructure awards will ameliorate impacts

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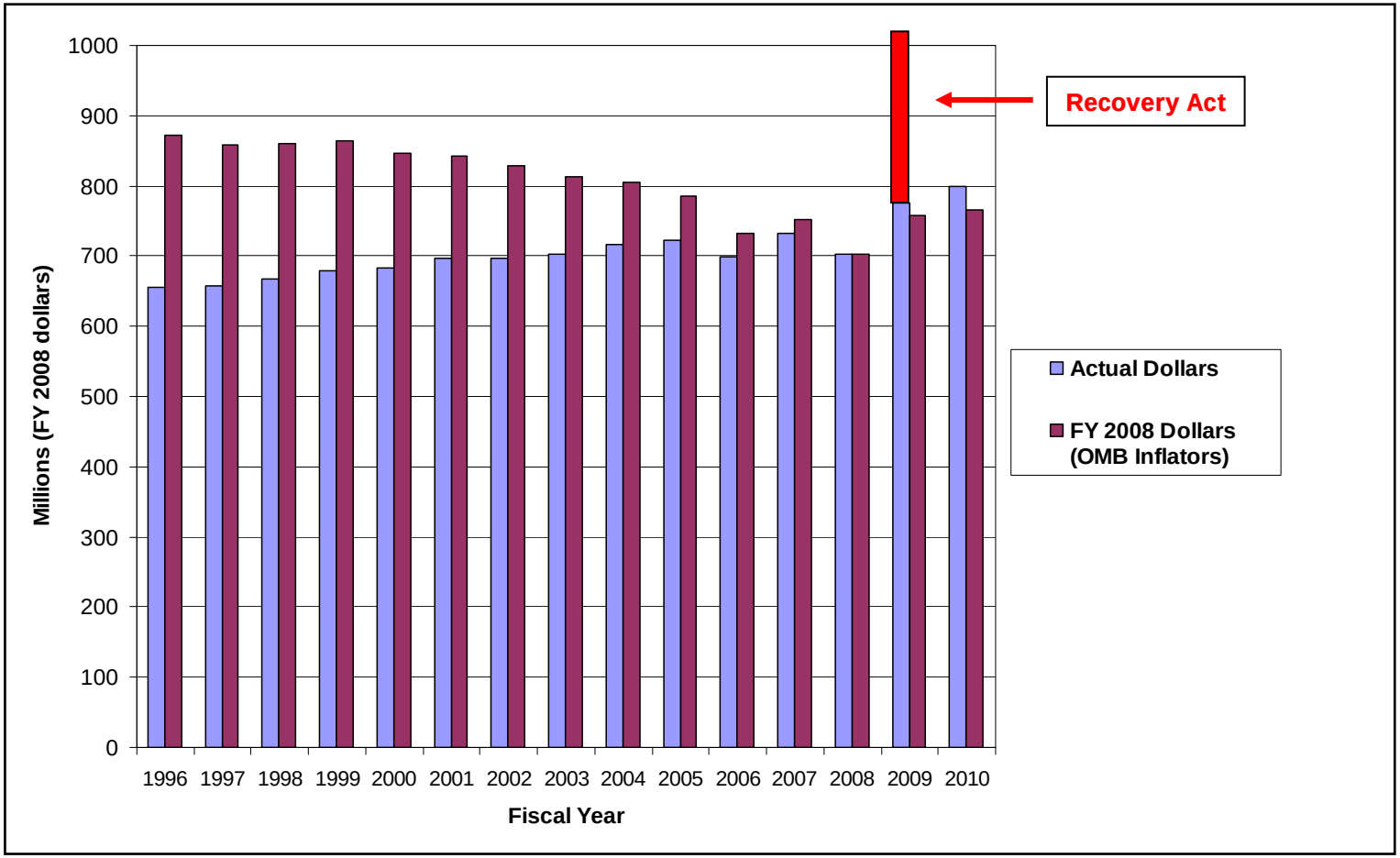
Budget Trend Turning Up?

- **HEP funding has been eroded by inflation: FY 2008 / FY 1996 ~ 20 % (OMB COL)**

- **HEP FY 2009 funding is +10 % compared to FY 2008 and above OMB Cost-of-Living (COL) from FY 2007**
- **HEP to receive $236.5 million in Recovery Act funding**
- **HEP FY 2010 Request is above OMB COL (+2.9 %) compared to FY 2009**



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FY 2011 Budget Process

- **FY 2008/FY 2009 Reviews and Briefings**
  - Fermilab and SLAC Reviews
  - Theory and Accelerator Science Laboratory Groups Reviews
  - Particle Data Group Review, BELLA/FACET Review
  - Detector R&D and General Accelerator Development Briefings
  - LARP, LHC, LQCD. SciDAC, etc.

- **Laboratory Management Budget Briefings Scheduled**
  - Feb 23: LBNL / Feb 26: FNAL / Feb 27: ANL
  - March 3: SLAC / March 4: BNL

- **OHEP Retreat - March 18-20**

- **FY 2011 HEP Budget submissions**
  - Going to SC now
  - To DOE probably around July

- **OMB Passback in November**

- **FY 2011 HEP Congressional Budget in December**

Sausage with a cast of thousands !

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OHEP News

- The Tevatron in 2011
- Intensity Frontier
- Bulletin from the Cosmic Frontier
- Accelerator Workshop
- OHEP Positions

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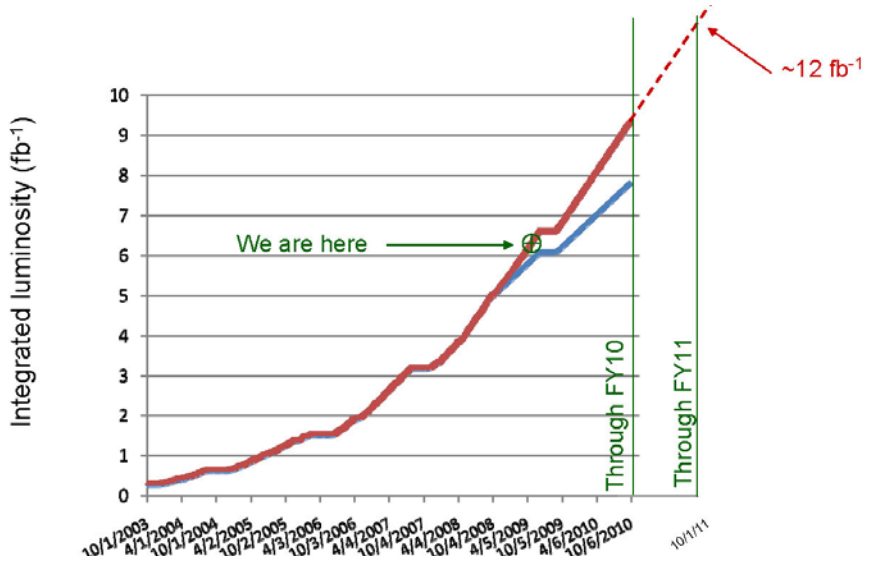
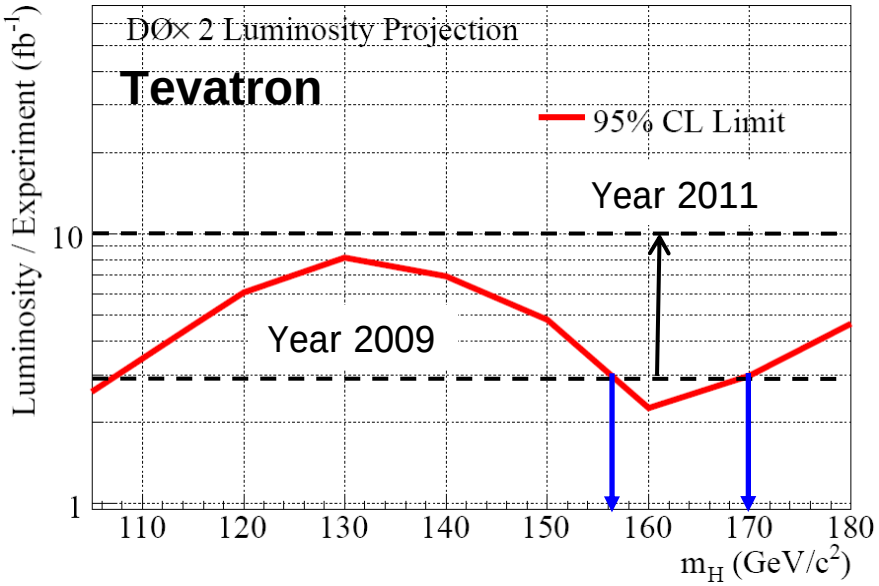
Tevatron run in 2011?

- The new LHC schedule , coupled with the time it will take the LHC experiments to bring their data to publication, provide a window of opportunity for the Tevatron
- By 2011 or shortly thereafter, the Tevatron experiments can either exclude the Standard Model in the favored mass region or report first evidence of a Standard Model Higgs
- Both the machine and detectors are running extremely well. A run extension into FY 2011 increases the chances of such a contribution
- The collaborations and Fermilab have briefed OHEP and requested a run extension and a timely decision. A decision to request FY11 funding will be made by the end of CY 2009.





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Long Baseline Neutrino Experiment (LBNE)

- OHEP is seeking approval from the Department for approval of Mission Need (CD-0) for the LBNE project. The project includes both a neutrino beam and a large detector.
- OHEP has identified FNAL, working with BNL as lead on the detector, to take responsibility for performing the work needed for approval of CD-1 (Exploration of Alternatives). This includes conceptual design, alternatives analysis, etc.
- FNAL has been working with the other laboratories to develop a CD1 "work plan". A first draft is due this week with the final version at the end of May.
- With the approval of CD-0, DOE R&D funds will be made available to support this work, which is expected to involve participants from laboratories and universities. As mentioned earlier, $15M from ARRA as well as FY09 and FY10 funds will be available.
- As recommended by P5 we are working with NSF to coordinate LBNE and DUSEL efforts.

PEP-II/SuperB

- **PEP-II**
  - Planning for Decommissioning & Decontamination (D&D) underway, review has been held
  - A number of alternatives for disposition of equipment

- **Proposed SuperB Facility (Italy)**
  - As you will hear in today's talks offers precision tests of SM and searches for new physics.
  - Italians (INFN) proposing a next generation ~10 GeV electron-positron collider facility Decision by Italian government is expected in calendar 2009.
  - INFN has requested that all the PEP II components be provided for this facility The estimated value is $130 million Euros (no significant U.S. need for additional components foreseen).
  - OHEP will need to make a decision in FY 2010, some considerations:
    - Level of interest by U.S. community
    - In context of constrained funding – impact on other parts of the program
    - International impact

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Cosmic Frontier

- National Academy of Science's Astronomy and Astrophysics Decadal Survey (Astro2010)
  - Town Hall meeting at APS in Denver
  - Over 200 proposals for projects were submitted to the Program Prioritization Panels – some will be asked to present at their meeting in early June.
  - http://sites.nationalacademies.org/bpa/BPA_049810

- Particle Astrophysics Scientific Assessment Committee (PASAG) also underway.
  - Steve Ritz (chair) reported on the PASAG at the APS meeting
  - Four subgroups have been formed and are holding regular phone calls
  - Draft report by early August

- JDEM
  - Town Hall meeting at APS in Denver with DOE and NASA sitting on the panel.
  - The European Space Agency (ESA) is continuing to review the Euclid space-based dark energy mission as part of their Cosmic Visions program planning process. They may join with JDEM at a later time.
  - DOE has identified JDEM to be scientifically compelling and an excellent opportunity for an inter-agency (and perhaps global) partnership that can achieve transformational discoveries.
  - DOE is committed to pursuing this opportunity with NASA and implementing a successful mission. In this partnership, input will be solicited from the scientific community and utilized to ensure that the mission concept, plan for the science investigations, and our contributions are optimized to deliver the best science within available resources.

- Alpha Magnetic Spectrometer (AMS)
  - AMS transport to the ISS is planned for space shuttle mission #STS-134 scheduled for 2010.

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Accelerator R&D Workshop

- OHEP historically has been the steward of advanced accelerator R&D for DOE (particle physics and SC programs)
- OHEP and SC believes that this stewardship should be informed and responsive to national needs. To do so we will be holding a national workshop on accelerator R&D
- Workshop goals are to identify, understand, and report on:
  - Role of accelerators in society
  - Current status with regard to capabilities, costs, and deployment
  - Stakeholder requirements (intensity, resolution, timing, and energy)
  - Organization of current accelerator R&D efforts
  - Path forward to meet society's needs
- The following individuals have agreed to be workshop co-chairs:
  - Walter Henning, Argonne
  - Charles Shank, Berkeley
- Weekly planning meetings
  - Dates are October 26-28, 2009
  - Working now to define scope and membership of subpanels
  - Open Plenary Session, Sub-panel participation by invitation
- Please contact John Boger (OHEP Lead) with questions and suggestions.

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OHEP Positions

- **Research and Technology Division (to be advertised shortly)**
  - **Theory Program Manager**
  - **Non-Accelerator Program Manager**
  - **Interdisciplinary Computer Scientist/Physicist (Computational HEP)**
  - **Administrative Support Specialist (Position open to internal DOE candidates)**
  - **Program Analyst (Position open to internal SC candidates)**

- **Facilities Division**
  - **Interdisciplinary General Engineer (Instrumentation and Major Systems)**
  - **FNAL Program Manager**