

BNL Overview

**DOE Annual HEP Program Review
Brookhaven National Laboratory
April 17, 2007**

Peter Bond

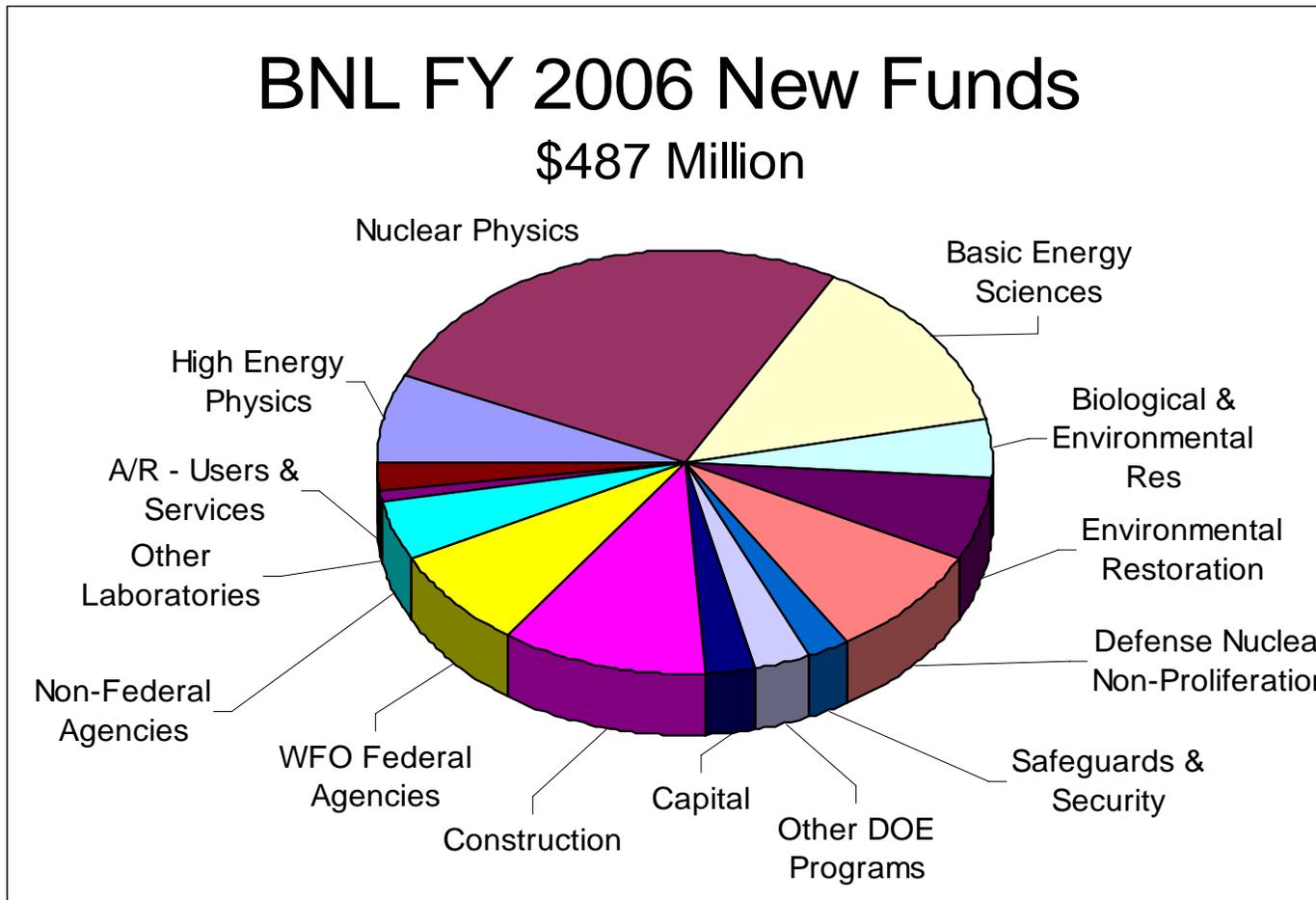
**Interim Associate Director for Nuclear and Particle
Physics**

BNL Overview

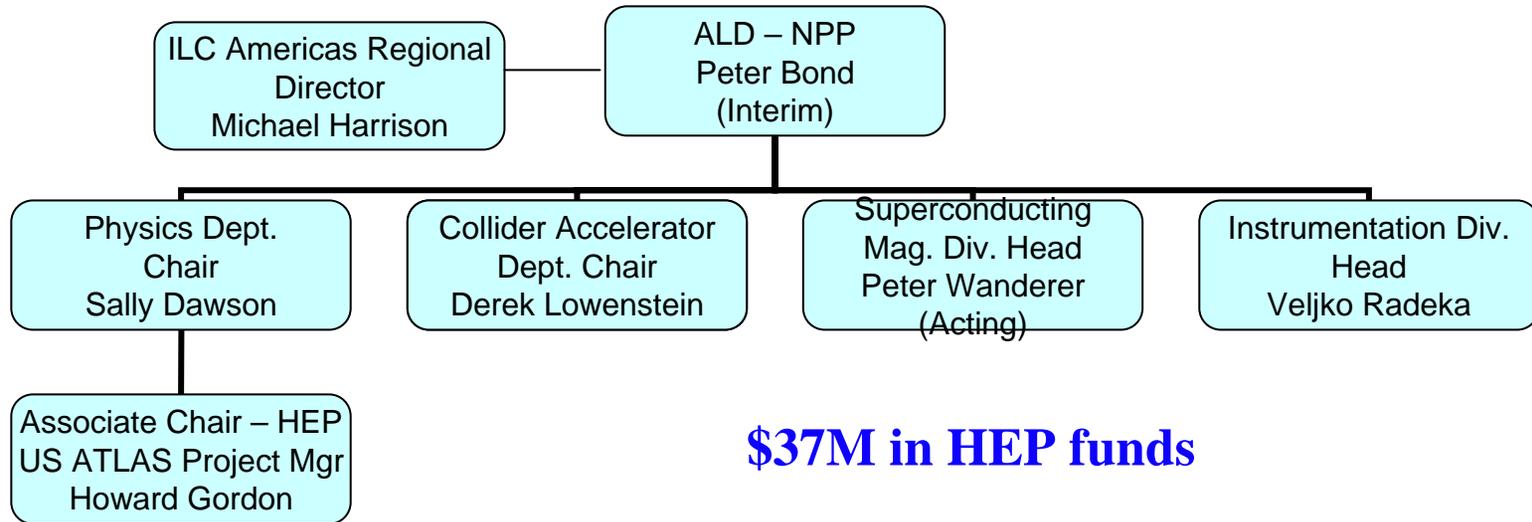
- The Lab funding is dominantly NP with a focus on RHIC
- BES is growing with the CFN nearly finished and NSLS II preparing for CD1
- HEP continues to play an intellectually vibrant role with exciting science in the near term

BNL Funding

BNL FY 2006 New Funds \$487 Million



HEP Organization



\$37M in HEP funds

- **Physics: staff ~ 220,**
 - HEP staff ~ 100 --- 50% ATLAS
 - The other 50% -- Neutrinos, Theory, Accelerator R&D
- **Superconducting Magnet Division: staff ~ 50 (14FTE HEP funded)**
 - Accelerator and Magnet R&D: LARP, ILC
- **Collider-Accelerator: staff ~ 370 (mostly NP-funded)**
 - Collaborative work with FNAL on its proton driver
- **Instrumentation Division: staff ~ 45 (mostly Lab-funded)**
 - ATLAS, ILC, LSST

Instrumentation Division

Mission:

“To develop state-of-the-art instrumentation required for experimental research programs at BNL.

To provide limited production quantities of such instrumentation for BNL-related experiments.”

Core technologies:

- **Semiconductor detectors** (pixel-, drift-, photo sensors);
- **Gas and noble liquid detectors;**
- **Microelectronics** (low noise analog/digital);
- **Lasers and Optics** (ultra-short photon & electron bunches, photocathodes, optical metrology);
- **Micro/nano Fabrication** (sensors, microstructures, e-beam lithography).

Staff:

44 Total (16 Scientists, 12 Professionals, 12 Technical, 4 Administrative)

Publications 2006 / Cumulative:

All Programs: 51 / 1334

The state of BNL HEP

- Reorganized experimental groups post-RSVP
 - Collider physics
 - US-ATLAS (host laboratory), D0
 - Michael Ernst hired to head ATLAS Tier I Computing
 - Mike Harrison named ILC Americas Regional Director and serves on the ILC Executive Committee
 - Fixed target & non-accelerator based physics
 - Neutrinos: MINOS, Daya Bay θ_{13} CD-1, very long baseline
 - Strong theory & accelerator groups
 - High Energy Theory
 - Advanced Accelerator R&D (key to Muon Collaboration)
 - Accelerator Test Facility (HEP, BES)
 - Superconducting Magnet Division (NP, HEP, WFO)
 - Wide-ranging R&D programs
 - Accelerators: AARD, ATF, SMD
 - Steve Peggs LARP program leader
 - Detectors: ILC, LHC upgrade, LSST (Physics, Instrumentation), neutrino

Comments from Last Review

- Several programs understaffed
 - Thanks to DOE for funding new postdocs !!
- We do excellent physics but spread too thin
 - More highly focused on ATLAS, neutrinos
 - (Of course more funding would also address this)
- ATF needs accelerator physicists
 - One hire has been made
- Discuss with D0 about rampdown
 - Plan has been discussed

Current/near-term issues

■ ATLAS – this year !!

- Staffing
- Travel funding
- Computing Infrastructure
 - Space, cooling, etc

■ Core Research Program funding

■ Superconducting Magnet Division

- Survivability options
- Retain core competencies

■ ATF

- Staffing

■ LSST

- Needs senior hire for success

Overall Funding remains an issue

Summary

- We believe we are aligned with national goals and focused appropriately

Our Challenge

- Right-sizing the BNL HEP effort
 - Balancing scientific vs. technical personnel
 - Balancing core effort vs. project effort
- We look forward to your assessment

A *few* Acronyms

- **AARD** – Advanced Accelerator R&D Group
- **ATF** – Accelerator Test Facility
- **LSST** – Large Synoptic Survey Telescope
- **QCDOC** – Quantum Chromodynamics on a Chip
- **SMD** – Superconducting Magnet Division
- **VLB ν O** – Very Long Baseline Neutrino Oscillation Experiment
- **WFO** – work for others
- **BES** – DOE Basic Energy Sciences
- **CFN** – Center for Functional Nanomaterials
- **NSLS II** – Proposed new light source at BNL