

# BNL Overview and Future Vision

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DOE Annual HEP Program Review  
Brookhaven National Laboratory  
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# HEP Preview

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## ■ BNL HEP has a lot going for it

- US-ATLAS
- Accelerator capable of forefront HEP expts
  - Operations highly leveraged
- Strong theory, experiment & accelerator groups
- Instrumentation Division
- Broad R&D programs
- Intra- and inter-agency connections and leverage

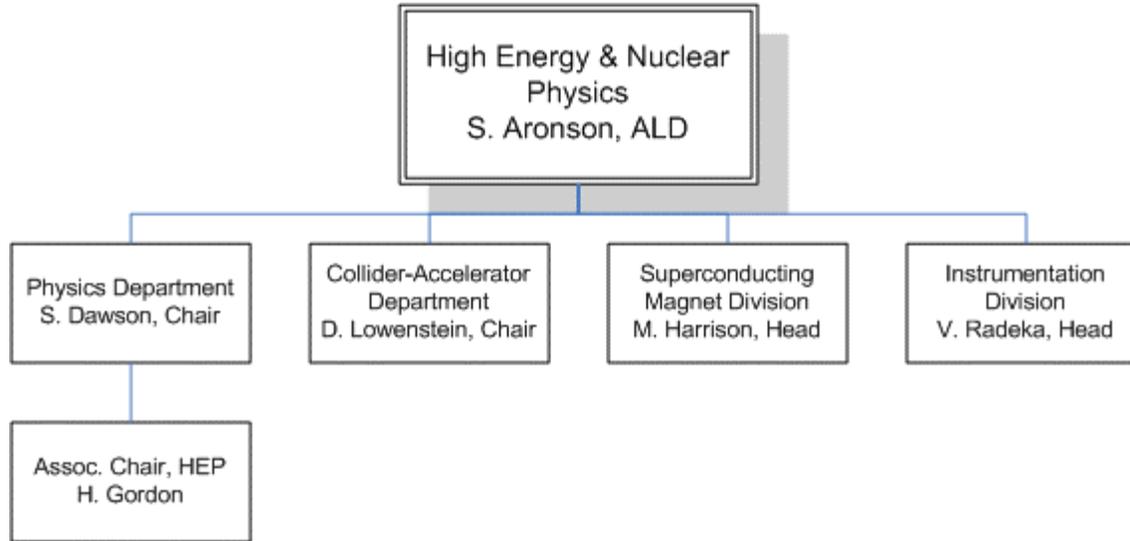
## ■ Current issues

- Funding needs vs. guidance on downsizing

## ■ Future issues

- Initiatives and the Lab's HEP role in the next decade

# HEP Overview



~\$27M/yr  
in Budget  
Authority

- Physics: staff ~ 300, (HEP staff ~ 90, 1/2 ATLAS, 1/2 everything else)
  - ATLAS, Theory, MINOS, D0, ATF, AARD, RSVP, LSST, VLBvO
- Collider-Accelerator: staff ~ 370 (mostly NP-funded: RHIC)
  - RSVP/AGS, VLBvO
- Superconducting Magnet Division: staff ~ 50
  - Accelerator and Magnet R&D: LARP, ILC
- Instrumentation Division: staff ~ 50 (mostly Lab indirect-funded)
  - ATLAS, RSVP, LSST

# Glossary

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- **AARD** – Advanced Accelerator R&D Group
- **ATF** – Accelerator Test Facility
- **DETF** – Dark Energy Task Force (HEPAP)
- **FFAG** – Fixed-focus Alternating Gradient
- **KOPIO** –  $K^0 \rightarrow \pi^0 \nu \bar{\nu}$  experiment (part of RSVP)
- **LSST** – Large Synoptic Survey Telescope
- **MECO** –  $\mu^- N \rightarrow e^- N$  experiment (part of RSVP)
- **NuSAG** – Neutrino Science Assessment Group
- **QCDOC** – Quantum Chromodynamics on a Chip
- **RSVP** – Rare Symmetry Violating Processes Project
- **SMD** – Superconducting Magnet Division
- **VLBvO** – Very Long Baseline Neutrino Oscillation Experiment

# Current/near term Activities

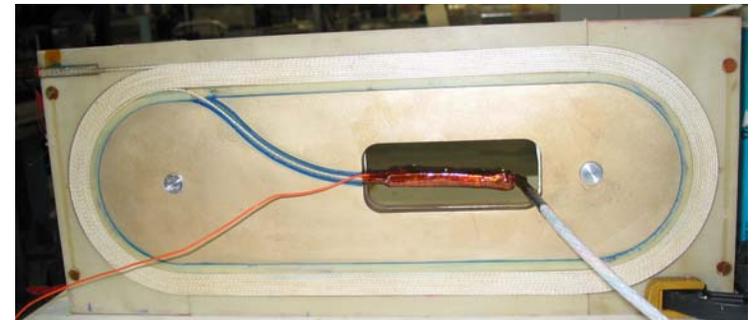
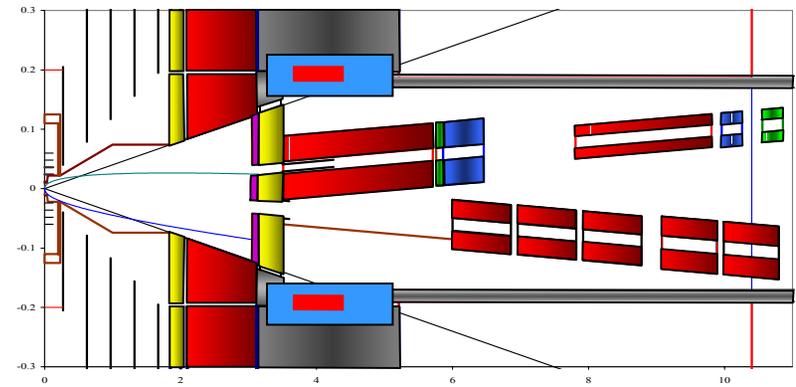
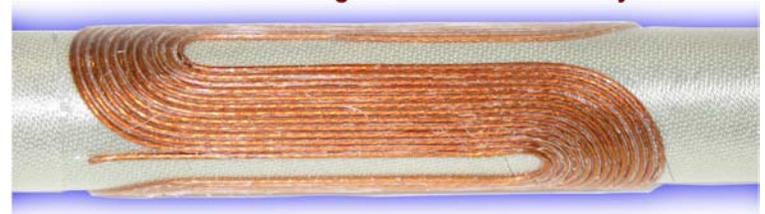
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- SMD – Core competencies, survivability options
- AARD – Collaboration commitment, R&D review
- RSVP – DOE/NSF MOU commitment
- g-2 – P5, funding

# Superconducting Magnet Division

Talk by M. Harrison

- Unique capabilities, complementary to the rest of the national program
  - Direct wind s. c. coil technology
  - ILC beam delivery/final focus
  - High temperature s. c. applications



# Superconducting Magnet Division

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## ■ Division is in financial trouble

- BTeV cancellation → \$0.9M+\$1.2M (`05+`06)  
– \$0.5M additional in `05 certainly helped
- 20 staff members (out of 72) RIF'ed in `05
- Future (revenue, scope, viability) is uncertain

## ■ SMD needs to be looked at in the context of the national Accelerator S&T program

- Define a sustainable SMD based on this
- Guidance from HEPAP R&D review needed

<http://www.science.doe.gov/hep/Subpanel%20List.shtm>

# Advanced Accelerator R&D Group

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- The BNL Group is a key member of the Muon Collaboration
  - 6 members +  $\frac{1}{2}$  secretary
  - \$1.9M DOE + \$0.25M BNL
  - Roles in main collaboration activities
    - Design & Feasibility Studies of Neutrino Factories
      - Now in negotiations to join a "World Design Study"
    - Develop Ionization Cooling
      - Run the Muon Ionization Cooling Expt
      - (Approved at RAL, and funded for Phase I)
    - Develop Liquid Hg Target at high intensity
      - Run approved Target Experiment at CERN
    - Study Muon Acceleration in FFAG Rings
      - Including their application to Proton Drivers