



U.S. DEPARTMENT OF  
**ENERGY**

Office of  
Science

# DOE University Accelerator Program

*HEPAP Meeting, April 6, 2014*

Glen Crawford  
Director, Research and Technology R&D  
Office of High Energy Physics  
Office of Science, U.S. Department of Energy

# DOE Accelerator R&D program

---

- **DOE/HEP has been working for the past few years on new initiatives in accelerator R&D to respond to a changing technology and program landscape:**
  - Launching the Accelerator Stewardship subprogram, to support fundamental accelerator science and technology development of relevance to many fields
  - We anticipate some restructuring of our HEP Accelerator R&D program, to address programmatic priorities and respond to subpanel recommendations
  - Developing new and improved approaches for advanced training and workforce development in accelerator physics
- **As the lead DOE program for accelerator stewardship and long-term accelerator R&D, HEP has a unique role to support workforce development in this critical technology area**



# HEP Advanced Technology R&D Grants

- **Current program supports approx. 30 grants at 25 institutions**
  - Including 2 Early Career awards
  - Not including conferences, workshops
  - A few efforts with broad applications have moved to the Stewardship program in last 2 years
  - Approx. \$10M annual budget (out of ~\$68M GARD budget)
  - Supports approx. 100 FTEs: 20 faculty, 14 Research Scientists, 11 postdocs, 32 graduate students, 10 undergraduates, 9 other
  - Major thrusts in:
    - **Beam physics and computation**
    - **Plasma Acceleration**
    - **High Gradient RF and RF Sources**
    - **SC magnets and materials**
    - **Superconducting RF**



# Workforce Development in Accelerator Technology

- It has long been recognized that the US system is not producing enough trained scientists and engineers skilled in accelerator physics and related technologies, at a time when accelerator facilities were becoming even more central to the Office of Science labs:
  - With an estimated 30,000 particle accelerators operating worldwide, there is a significant—and growing—need for a technically competent workforce
  - About 3000 FTEs involved in accelerator operations in Office of Science labs alone
  - Yet only ~15 U.S. PhDs produced per year (cf. ~100 in Europe)
- HEPAP recommended establishing training grants for students in this area, and the recent Office of Science Graduate Student Research program (HEP division) does exactly that
  - Call for applications for 2015 closes **April 14**
- Moreover, HEPAP called for “recognizing accelerator science as a distinct academic discipline, and increase support for university investigators”
  - New NSF program has established initial funding for this in a traditional grant program
  - DOE/HEP is interested in exploring new partnerships that can create sustainable academic programs in accelerator science at research universities and build strong connections to DOE labs



# Request for Information

---

- We plan to issue a Request for Information (RFI) soon that will ask how to ensure continued world-class accelerator R&D and the training of a world-class accelerator workforce, e.g.:
  - How to increase recognition of accelerator science in academia
  - How to best integrate university, national lab and other resources
- The RFI will also explore how such programs could be instituted and configured for maximum impact, including:
  - Existing examples of cross-disciplinary academic programs in technology or “applied” science areas that have led to MS/PhD programs with long-term achievements
  - Successful models and “best practices” for advanced student training and mentoring in these areas
  - Successful models for faculty evaluation, promotion and retention in cross-cut areas
- Depending on the results, the RFI may be followed with a funding opportunity announcement in FY2016.
  - Similar to the RFI process employed for Stewardship program



# Your Input Welcome

---

- **Please see the RFI when it comes out**
  - We will also post to HEP website and notify PIs, DPF, DPB
  - RFI will be open for comment for 45 days
- **Send us your thoughts, responding to the specific questions asked**
- **Will provide updates to HEPAP at a future date**

