



U.S. DEPARTMENT OF
ENERGY

Office of
Science

Notes for Early Career Researchers

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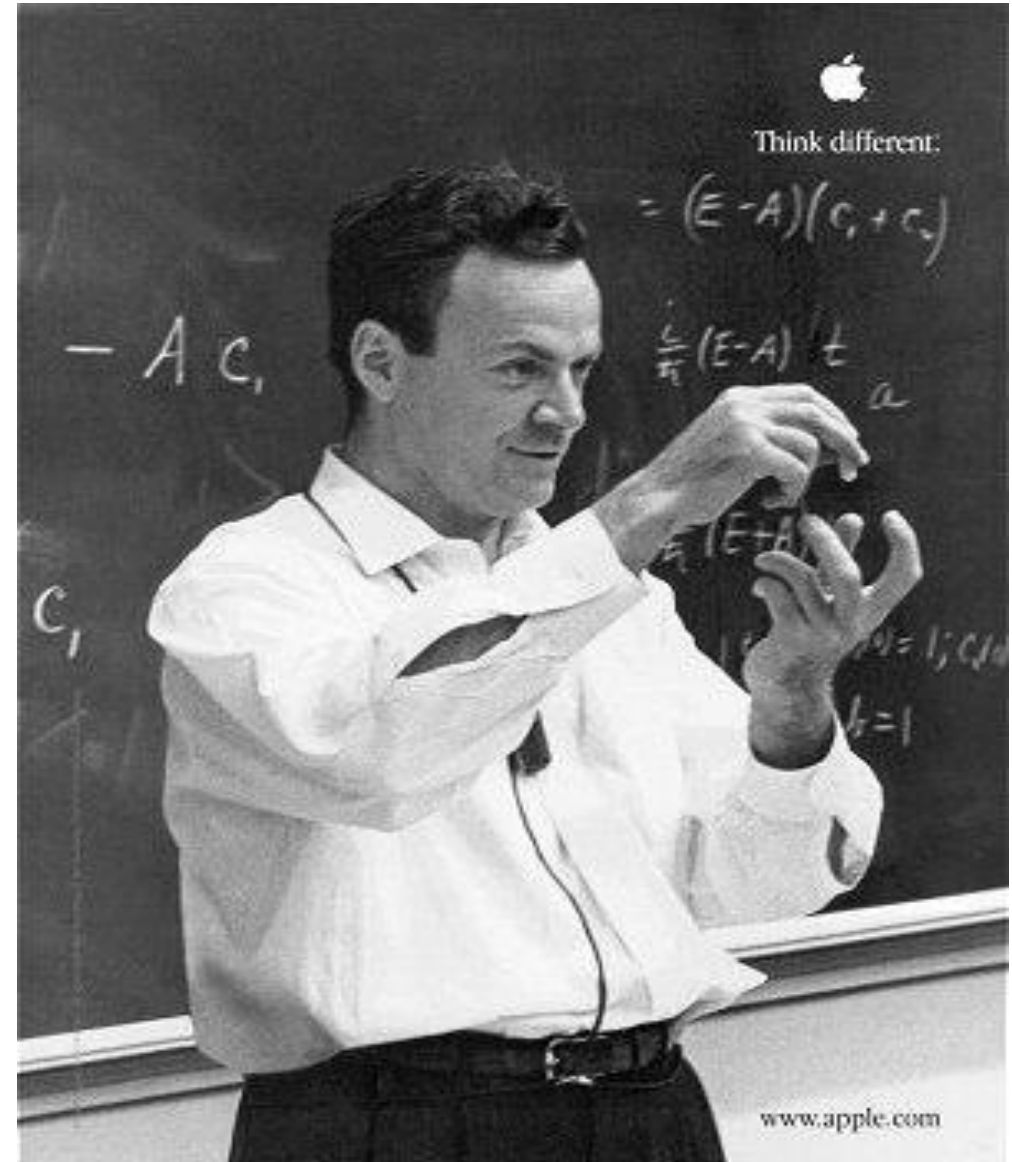
P5 Virtual Town Hall

June 5 2023

Outline

- ▶ Things to Think about:
 - ▶ PI Roles and Responsibilities
 - ▶ Food for Thought : **Mentorship, Diversity**
- ▶ DOE Funding 101 (short version)
 - ▶ For further info: HEP PI Meeting 2023 (virtual, details to follow)
- ▶ Where to Look for:
 - ▶ **Funding (for PIs and others)**
 - ▶ **Training**

For further general HEP program info, see e.g. Dec 2022 HEPAP presentations



The Role of PI's

- ▶ PI's are the representative of the institution that gets the award and the manager of that award
 - ▶ We rely on PIs to be effective managers (and mentors!)
- ▶ We want you to be successful in carrying out your research
 - ▶ PIs have broad flexibility to carry out their program within the scope of the grant award
 - ▶ We can work with you to make adjustments if needed
- ▶ If there are any local issues that arise, we expect you to solve them
 - ▶ In case of serious issues impacting research (like COVID...), changes in senior personnel, changes in roles or responsibilities of the research group:
 - ▶ Contact your program manager and/or grant monitor. Don't wait until next Renewal!

The Responsibilities of PI's (and everyone)

- ▶ The primary goals of HEP Research grants are:
 - ▶ The advancement of scientific knowledge
 - ▶ Support and training for junior scientists (i.e., students and postdocs) via conduct of that research
- ▶ We want students and postdocs to successfully complete their research and move on to the next step of their careers
 - ▶ Whether that is in HEP research, a different field, or something else
 - ▶ We expect an effective **mentorship** plan will be part of the research strategy
- ▶ Further, we want to **broaden and diversify** the HEP research community and increase **opportunities** for everyone to contribute.



Food for Thought: **Mentorship**

Mentorship, continued

"Promote the importance of effective mentorship as a consideration in the proposal review process."

HEP Committee of Visitors Report (2020), Recommendation 7

- ▶ We have adopted this Recommendation and now request a Recruiting and Mentoring Plan as part of HEP Comparative Review FOA submissions.
- ▶ Reviewers will be asked to assess the quality and efficacy of this Plan as it is now an explicit Merit Review criteria.
- ▶ Effective mentoring is also considered an essential element for improving and sustaining diversity in the field
- ▶ **This has been incorporated more widely across DOE/SC in the PIER plans.**



Diversity

Diversity

- ▶ **Diversity, Equity and Inclusion** is well-recognized as a critical consideration for the advancement of a community of practice, and particularly for STEM fields where, despite many good-faith efforts in recent decades, various barriers have restricted progress
- ▶ All research applications must provide a **Promoting Inclusive and Equitable Research (PIER) Plan** as an appendix to the research proposal narrative. The PIER plan should describe the activities and strategies of the applicant to promote equity and inclusion as an intrinsic element to advancing scientific excellence in the research project within the context of the proposing institution and any associated research group(s).



SC Funding Opportunities 101

1. **Office of Science Open Call [a.k.a., *Continuation of Solicitation for the Office of Science Financial Assistance Program*, current version is DE-FOA-0002844]**
 - ▶ Always open, covers ~all areas of SC science missions
 - ▶ The main funding vehicle for most SC programs (but not HEP)
 - ▶ HEP uses this primarily for supplementals, conference proposals, small project/equipment proposals, other miscellany
2. **Program-specific Calls for Proposals (e.g., HEP Comparative Review)**
 - ▶ Have a defined beginning, end, and specific purpose
 - ▶ Usually topically focused
 - ▶ Each SC program plans its own suite of FOAs for a given Fiscal Year and requests approval from SC management.
3. **Multi-program or multi-agency Calls for Proposals (e.g., SCiDAC, US-Japan)**
 - ▶ As above, but 2 or more SC programs/funding agencies co-sponsor.
 - ▶ Generally one program is lead and other programs support
 - ▶ Multi-program calls cover cross-cutting topics. Will get reviewed by experts in multiple fields.
 - ▶ If multi-agency, will need to submit separate proposals (not always the same) to each agency.

Where to Find DOE Funding Opportunities

All of SC : energy.gov/science/office-science

→ Funding menu → Funding Opportunities

This will take you to a Search engine for all Open SC FOAs followed by a listing of all current Open FOAs ordered by posting date (latest 1st)

HEP : energy.gov/science/science-programs

→ High Energy Physics → Funding Opportunities

(similar path for other SC programs such as ASCR, NP, etc.)

This will get you Currently Open **HEP FOAs** and lab calls, with the SC Open Call listed first, Scroll down for others.

For Closed FOAs or Lab Calls see Menus to the left.



Selected Recent HEP FOAs and Lab Calls

| FOA | Teaming | # Proposals ; Success Rate | Period of Performance | Average Award | Research Focus |
|-------------------------------|-------------------------------------|-------------------------------|--------------------------|--------------------------------|---------------------------------------|
| HEP Comparative Review | Single- and multi-PI ; Univ only | ~150/yr; ~50% | Mostly 2-3 yrs | \$200k/PI/yr | Core HEP Research and Tech R&D |
| Early Career Research Program | Single PI; Univ/Lab | ~80-90/yr; ~10-15% | 5 yr | \$875k (univ); \$2.5M (lab) | Core HEP Research and Tech R&D |
| QIS-HEP | Single- and multi-PI ; Univ and Lab | ~50/yr; ~30% | 2-3 yrs | \$1M | QIS theory, sensors, HEP applications |
| US-Japan Cooperative Program | Single- and multi-PI ; Lab only | ~30/yr; ~80% | 1 yr | <\$200k | US-Japan joint technology R&D |
| Accelerator Traineeship | Single- and multi-PI ; Univ only | 4-5/yr; 1-2 awards/yr | 3-5 yr | \$500k/yr | Accel workforce development |
| Dark Matter New Concepts | Single- and multi-PI ; Univ and Lab | 32 proposals; 6 awards | 2-3 yr | ~\$1M (total) | New expt R&D; concept design |

HEP Training and Educational Opportunities

- ▶ There are a growing number of specialized education, training or “workforce development” programs available for interested students in HEP and related fields.
- ▶ These allow you to explore and develop new skills and areas of expertise; many also offer networking and career-development seminars and mentoring

Internships for **undergrads**:

Science Undergraduate Laboratory Internships (SULI) at DOE Labs for US citizens and permanent residents: science.osti.gov/wdts/suli

Many more lab-based opportunities, including for non-US students: check lab websites for details

Traineeships for **undergrad and grad students**, select institutions:

HEP Traineeships in specific technical areas, graduate level

RENEW Traineeships, undergrad level, various HEP-related topics, some joint with DOE NP

Educational Opportunities at **~all levels**:

US Particle Accelerator School, grad level university-style courses with hands-on labs; 2 sessions a year, credit-earning including a MS option : uspas.fnal.gov

EDIT School for Detector and Instrumentation Technologies, grad level courses including hands-on experiments; 1 session every ~ 1-2yrs : indico.desy.de/event/22513



HEP Funding Opportunities for Students + Postdocs

- ▶ Most students and postdocs are supported on teaching assistantships, and/or research grants, which go to the Institution (under the leadership of the PI(s))
- ▶ There are relatively few options within DOE for *direct* research support of graduate students or postdocs. Some academic institutions may allow advanced postdocs to be co-PIs on research proposals, check with your institution.
 - ▶ **Office of Science Graduate Student Research Program (SCGSR)** for US citizens and permanent residents in full-time US graduate program, provides support (stipend, some travel) for student's research at a DOE lab, up to 12 months. Competitively selected proposals, any HEP research topic, 2 calls/year. science.osti.gov/wdts/scgsr
 - ▶ **Ozaki Exchange Program**, part of US-Japan Cooperative Agreement on High Energy Physics, supports students (stipend, travel) in full-time US graduate programs interested in conducting HEP-related research in Japan, 3-12 months, renewable one-time. Competitively selected proposals, 1 call/year. bnl.gov/ozaki
 - ▶ **Graduate Instrumentation Research Award (GIRA)** supports students in US graduate programs to conduct R&D on advanced instrumentation in concert with a DOE national lab, 12 months, renewable twice. Competitively selected proposals, 1 call/year. Detectors.fnal.gov/gira
 - ▶ More lab-based exchange programs and proposal-driven awards : check lab websites for details

Career Opportunities for Scientists in Government

There are several career opportunities available at DOE (not just HEP, also other SC offices and DOE or government-wide programs):

- ▶ Internships for undergrads and graduate students:
 - ▶ **DOE Scholars** (formerly *Pathways*) for US citizens who are current or recent students in a STEM field : orise.orau.gov/doescholars/
 - ▶ **Minority Educational Institution Student Partnership Program (MEISPP)** for all US citizens who are full-time students; not limited to MSI students, underrepresented groups, or STEM: doemeispp.org
- ▶ Fellowships for post-graduates
 - ▶ **AAAS Science and Technology Policy Fellowship** for US citizens with a PhD in science or a MS in engineering, 1 yr renewable : aaas.org/page/fellowship-areas
 - ▶ **Presidential Management Fellowships** for advanced degree recipients, US gov't-wide, 2 yr program, convertible to Fed staff position : pmf.gov
- ▶ Federal jobs (variable education requirements, see individual postings)
 - ▶ All posted on usajobs.gov. Can be entry-level or more advanced.
 - ▶ Some agencies (NASA, NIST) have both research scientist (i.e. active research) positions as well as program management positions; others (DOE, NSF) have only program management with limited opportunities for independent research. Read job description carefully and consult with agency contacts if you have questions.





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