**U.S. DEPARTMENT OF ENERGY** | Office of Science

January 27, 2023, Informational Webinar for DE-FOA-0002939

# NUCLEAR PHYSICS REACHING A NEW ENERGY SCIENCES WORKFORCE (NP-RENEW)

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| FOA Issue Date: | January 9, 2023 |
| Submission Deadline for Pre-Applications: | February 20, 2023, at 5:00 PM  Eastern Time |
| Pre-Application Response Date: | March 6, 2023, at 11:59 PM Eastern Time |
| Submission Deadline for Applications: | April 17, 2023, at 11:59 PM  Eastern Time |

https://science.osti.gov/Initiatives/RENEW

https://science.osti.gov/-/media/grants/pdf/foas/2023/SC_FOA_0002939.pdf

# Nuclear Physics at-a-Glance

▸ We use the atomic nucleus to answer big questions like:

- Why is there more matter in the Universe than antimatter? And what symmetries and laws govern nuclear matter?

- Where, when and how were the heavy elements like gold and platinum formed? And what are the heaviest elements that can exist?

- What forms of matter existed in the very hot and dense early universe? And what forms of matter exist now in the interiors of neutron stars?

- How do nearly massless quarks and gluons come together to create massive protons and neutrons, the building blocks of visible matter or other hadrons?

- How can nuclear data and accelerator or detector technology be improved and leveraged to benefit society?

▸ Our research can be categorized in three broad areas of focus:

| Quantum Chromodynamics | Nuclear Structure/Nuclear Astro | Fundamental Symmetries |
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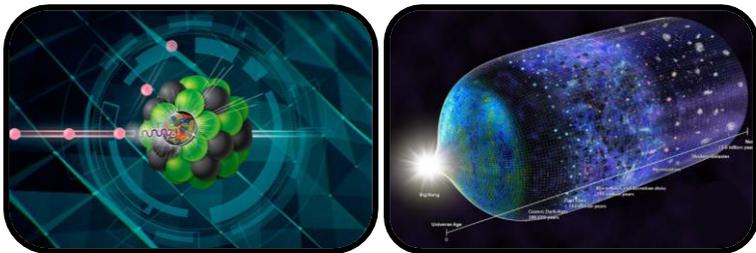


Emergence of Hadrons from QCD, Hot and Dense Nuclear or Gluonic Matter
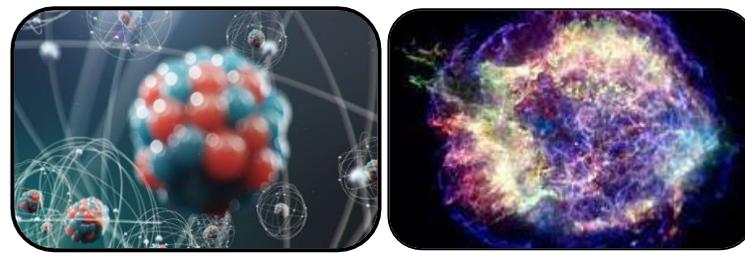
Structure of the Atomic Nucleus and the Birth of Nuclei in Astronomical Processes
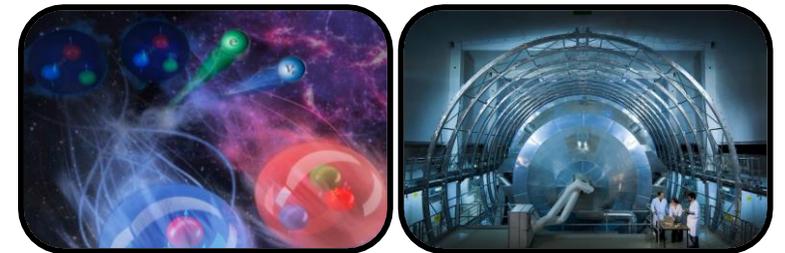
Probing Universal Laws in Nuclear Decays, the Origin of Matter, and Neutrino Mass

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# Nuclear Physics at-a-Glance: People and Places
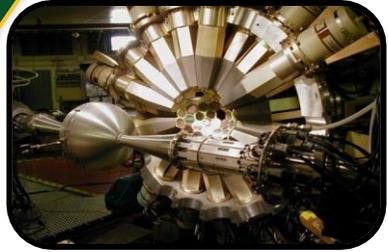


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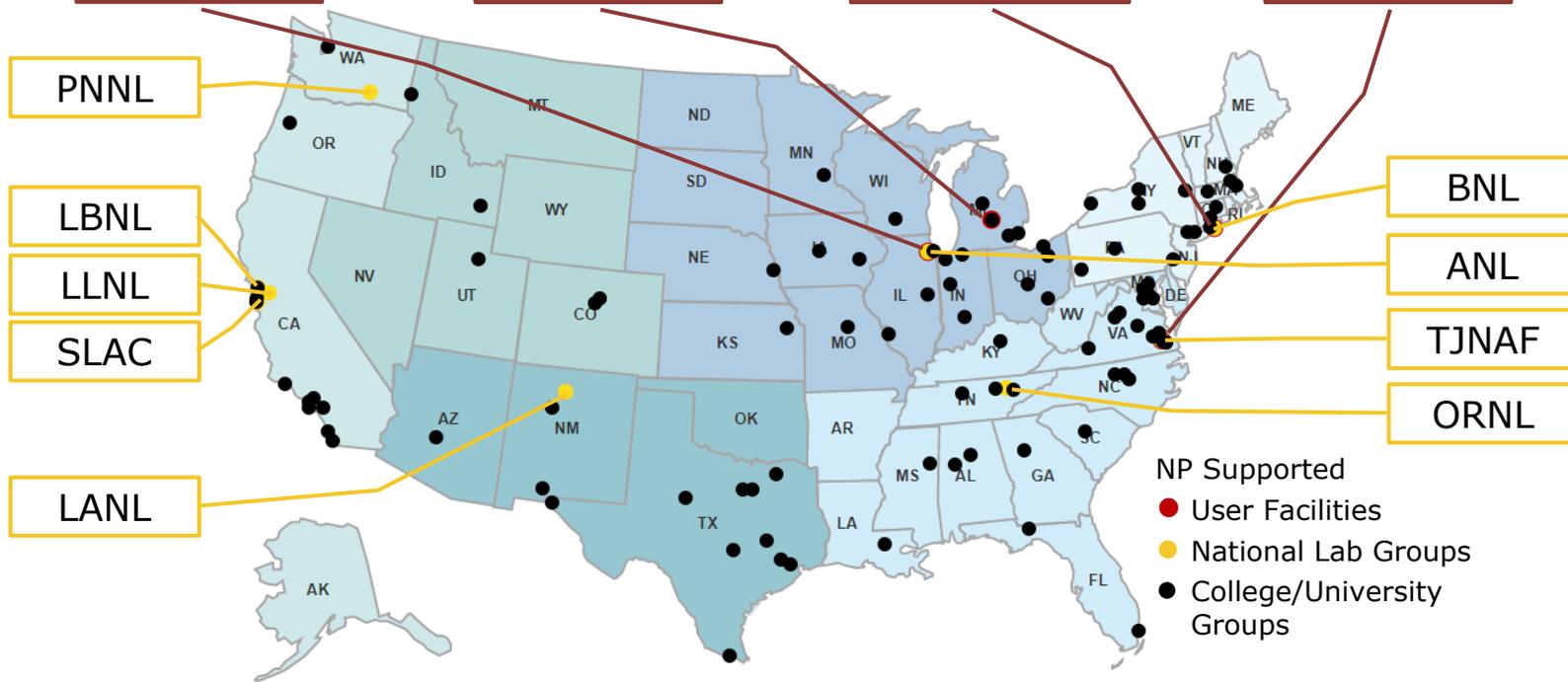
**NP Workforce**
- ~852 Faculty & Lab Res Staff
- ~391 Post-docs
- ~630 Graduate Students
- ~900 Lab technical/admin
- ~150 Undergraduate Students

PNNL

LBNL

LLNL

SLAC

LANL

BNL

ANL

TJNAF

ORNL

NP Supported
- ● User Facilities
- ● National Lab Groups
- ● College/University Groups
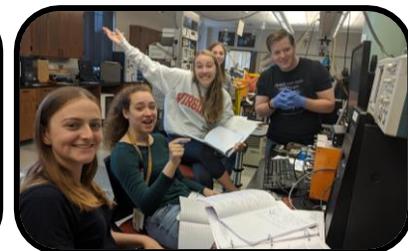
DOE NP supports >95% of nuclear physics research in the U.S at national labs and user facilities, university labs, centers-of-excellence, underground labs, and international facilities like CERN.

# Stewardship of a Diverse, Capable Workforce

| PhDs granted to NP supported students in the past 5 years: **558** | Number granted to Black or African American students: **16 (2.9%)** | Number granted to Hispanic or Latino students **18 (3.2%)** | Underrepresentation factors relative to the US population **4 and 6** |

Despite past efforts, representation of negatively stereotyped groups within the DOE NP supported community remains substantially below that observed in the US population.

In 2020, NP developed a traineeship program to help build a more diverse community and to reduce barriers for negatively stereotyped and underrepresented groups.

In 2022, the Office of Science established the RENEW initiative to provide traineeships across all programs.

The NP traineeship program, now part of RENEW, has been broadened beyond traineeships.

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# Evolution of the NP Traineeship Program

Interest in the FOA was much stronger than expected with many high-quality proposals: **27 awards were made** in two phases. Awards in 2022 were funded through RENEW ($3M).

Emphasis was placed on engagement with MSI faculty and students through direct awards or partnerships and **~70% of the funds went to MSIs, MSI faculty, or MSI students**

INSIGHT at MSU was funded to provide program evaluations and other program support and coordination

Evaluations and surveys indicate mostly positive experiences for trainees. **Of the seniors who participated in the program in 2021, ~50% are now attending graduate school.**

Extended-duration, research traineeships emphasizing engagement with emerging research institutions are now a central aspect of the DOE Office of Science RENEW program

For the 2023, NP has substantially broadened the NP-RENEW program to 1) increase **pathways** of entry, 2) bolster **retention**, 3) increase **research capacity** at MSIs.

# Reaching a New Energy Sciences Workforce (RENEW)
## NP Participation in RENEW $3M (FY22) and $6M (FY23)

Building foundations through undergraduate and graduate training opportunities for students and institutions historically underrepresented in the SC research portfolio



- SC conducted outreach and listening sessions in FY21-22 on barriers to participation in SC opportunities to inform FY 2022 FOAs
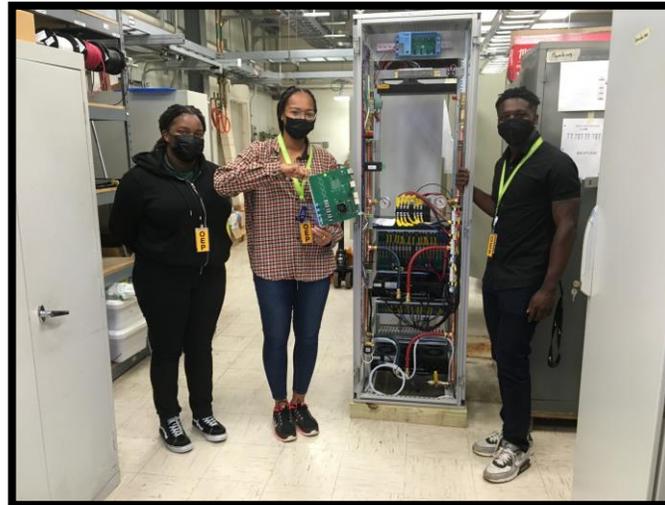
- FY 2022 FOAs are piloting models of support that directly address barriers to participation in SC supported fields of research; Models will be evaluated
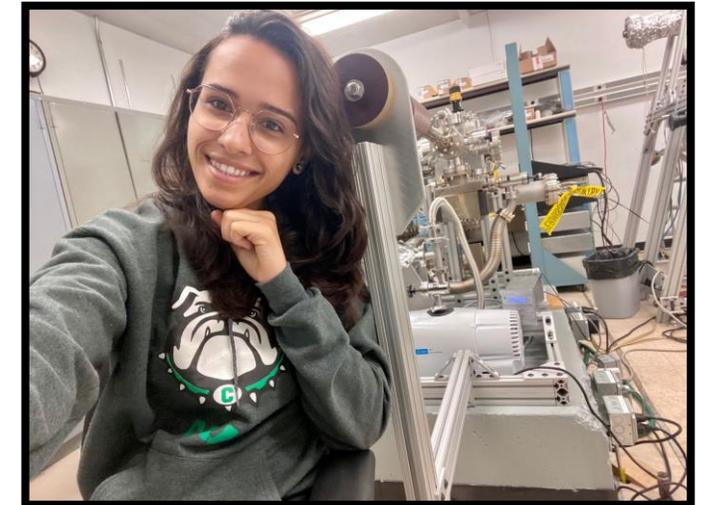
- FY 2023 doubles investment and commitment to advance discovery and innovation by increasing the diversity of individuals and institutions supported

https://science.osti.gov/initiatives/RENEW

# What is the vision for NP-RENEW in 2023

NP envisions expanding its program in 2023 through renewals, supplementals, and new awards that

- ▸ Build on the NP traineeship program to increase entry points and maintain its sustainability

- ▸ Support retention through graduate student supplements and awards for other retention related activities

- ▸ Increase research capacity at MSIs through support for research-teaching postdoctoral fellows, teaching buy-outs, faculty expansion positions, and joint research endeavors.

Notes:
Evaluation related to the impacts of RENEW will be conducted through a centralized SC effort, administered by ORISE on behalf of SC.

Awardees from the first phase of the NP traineeships who want to renew their awards should apply to the FY23 NP-RENEW FOA. Awardees from the second phase may apply in FY24. Projects should start on 9/01/2023 (we will not be able to provide funds in time to support activities this summer).

# Building on the NP traineeship program

▸ Award duration two to five years. If an award is recommended, we may negotiate a revised budget that changes the total funding and/or the award duration.

▸ The undergraduate-only restriction for beneficiaries is removed. Typically, projects should provide 15 hours of trainee support per week during the academic year and 40 hours of support per week during the summer. Preference given to applications with compensation comparable to the cost of living.

▸ To recognize the role of those involved in mentoring, the proposed inclusion of partial support for summer salary for faculty and/or partial salary support for postdoc or graduate student mentors (up to 30%) will be considered.

▸ Applications with clear recruitment and mentoring will be favored. Simultaneous support of multiple trainees (a cohort) is required.

▸ Applications should clearly articulate benefits to the participant trainees, including skills acquired, networking opportunities, and practical assistance in career planning.

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# Supporting Retention

▸ Awards, or supplements to existing research awards, may be requested to provide support for graduate students from MSIs/HBCUs who are participating in NP research within our current scope or for graduate students who are previous NP traineeship participants. Applicants with current NP awards should seek guidance from their relevant topic area Program Manager before submission.

▸ Applicants should aim to address large scale issues with retention in nuclear physics. Successful awards will improve retention of underrepresented groups in NP-sponsored research areas at any point in the "pipeline" or "pathways." These can include proposals addressing improvements to the climate within research collaborations. Issues related to the climate in departments or institutions are not encouraged.

# Expanding Research Capacity

- Research-Teaching Postdocs: Ideally, 25-50% of the postdoc's time will be spent teaching with the remaining time spent on research. Teaching time must be covered by other sources.

  - Proposals that leverage the postdoc's teaching time to increase the PI's research time (through teaching buyout) are encouraged allowing the postdoc to gain teaching experience while freeing faculty time and avoiding problems for the department.

- MSI Research Faculty Expansion: NP will consider supporting 50-75% of a new hire's time to be spent on research.

  - Applications will be considered from institutions or alliances of institutions to encourage the expansion of nuclear physics research at MSIs through new faculty positions. RIKEN and FRIB theory fellowships are relevant models.

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# Expanding Research Capacity: Joint Endeavors

▶ Support for a focused research activity undertaken jointly between an established research institution, including but not limited to national labs, and an MSI.

▶ These should typically include a two-way exchange of researchers.

▶ Should establish and maintain a long-term, equitable relationship between institutions.

▶ May include joint-faculty positions

▶ The goal of this category is to spur a sustained increase in research capacity at MSIs — Proposals will be evaluated based on their likelihood of achieving that goal.

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# Funding for Accelerated, Inclusive Research (FAIR)

FAIR will enhance research on clean energy, climate, and additional topics spanning the Office of Science portfolio at institutions historically underrepresented in science.

▸ Build research capacity, infrastructure, and expertise

▸ Develop mutually beneficial relationships between applicants and DOE national laboratories and user facilities

▸ Complement the RENEW initiative (traineeships for workforce development)

▸ Support single institution and a research partner; equipment or infrastructure investments are allowable costs

▸ Majority of funds will go directly to the lead institution, a portion will fund the partnering institution
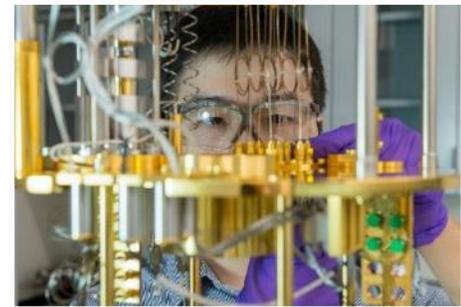
# NP-RENEW and FAIR

▶ RENEW is focused on traineeships, workforce development, and research capacity and can include equipment requests while FAIR is focused on infrastructure and research capacity including workforce

▶ They complement each other with elements of overlap

  ▸ If the focus of your proposal is clearly dominated by traineeships, submit to RENEW.
  ▸ If the focus of your proposal is on establishing a lab or research infrastructure, submit to FAIR

▶ You are also encouraged to consider submitting to both.

▶ If submitting to both, avoid trying to support what should be one cohesive project through separate but interdependent proposals. Reviewers need to evaluate how your project will work without external assumptions about other proposals.

▶ NP will evaluate RENEW and FAIR proposals with the same panel on the same week; all RENEW panelists will be FAIR panelists and all FAIR panelists will be RENEW panelists.

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# Scenarios for submitting to RENEW and/or FAIR

▸ If submitting to both FOAs, avoid trying to support what should be one cohesive project through separate but interdependent proposals. Reviewers need to evaluate how your project will work without external assumptions about other proposals.

▸ If your project has some elements that can only be submitted to FAIR, and some elements that can only be submitted to RENEW, and those aspects depend on each other, one strategy to consider would be to submit to both FOAs using the same narrative (describing the whole project) but different budget sheets and justifications for the scope relevant to each FOA.

  ▸ Make it clear in your proposal, what you are doing so that we, and the reviewers can understand.

  ▸ There must be a very clear delineation about which scope would be supported through each proposal. We must avoid the appearance of funding the same scope of work twice.

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# Multi-Institutional Teams

## Collaborative Applications

- Must indicate a part of a collaborative project/group. Please use identical titles.

- Each partner must submit an application through its own sponsored research office.

- Each partner must submit their own SF-424 (R&R), unique budget, and unique budget justification

- Title page, narrative, and required appendices must be identical.

- Each collaborative institution if successful will receive an award.

- Labs can participate in collaborative applications

## Subawards

- Multi-institutional teams may submit one application from a designated lead institution with all other team members proposed as subrecipients.

- Award goes to the lead institution with funds dispersed through subawards.

- For RENEW, labs can be the lead institution or the subrecipient.

# Where to find more information

▸ FOA: [DE-FOA-00027937](DE-FOA-00027937)

▸ This webinar is being recorded; slides and the recording will be posted on the [RENEW page](RENEW page)

▸ Questions about the FOA? Check out the [FAQ](FAQ)

# Question & Answers

Please submit questions using Zoom Q&A window, which should be accessible at the bottom of your zoom window

If your question is not answered today, or you have additional questions about the presentation, please submit to [paul.sorensen@science.doe.gov](mailto:paul.sorensen@science.doe.gov) and/or [sharon.stephenson@science.doe.gov](mailto:sharon.stephenson@science.doe.gov)

*Disclaimer : This presentation summarizes the contents of the FOA. Nothing in this webinar is intended to add to, take away from, or contradict any of the requirements of the FOA. If there are any inconsistencies between the FOA and this presentation or statements from DOE personnel, the FOA is the controlling document.*

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# NP-RENEW FOA: Important pages

The FOA is the controlling document and there are important guidelines throughout. But a potential applicant trying to understand how they might be able to participate can start with the following 20 pages:

▸ Pages 1 to 5 describe the goals and key expectations (especially pages 3 to 5)

▸ Pages 7 to 10 describe allowable expenses and collaborative arrangements and maximum award size (it's $500k/year)

▸ Pages 18 to 25 give guidelines on your project narrative and appendices

▸ Pages 31 to 33 describe the criteria that will be used during review and selection. Your proposal should address these criteria clearly. Reading the criteria may also help you catch weaknesses in the proposal that you may want to mitigate.

# Pre-Applications

▸ Optional but helpful

▸ Must be submitted by an authorized institutional representative

▸ If a multi-institutional team is submitting a collaborative application, only the lead institution should submit a pre-application.

▸ Must include a list of individuals who should not serve as merit reviewers

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# Checklist for avoiding common errors:
# (not a comprehensive list of all FOA requirements)

‣ Tables: FOA requires a table of collaborators and conflicts of interest with the application
  ‣ List of individuals who should not serve as reviewers (FOA p.25)

‣ Promoting Inclusive and Equitable Research Plans
  ‣ Additional Guidance about PIER plans are available at [https://science.osti.gov/grants/Applicant-and-Awardee-Resources/PIER-PlansA](https://science.osti.gov/grants/Applicant-and-Awardee-Resources/PIER-PlansA) Data Management Plan

‣ Data Management Plan
  ‣ Additional Guidance on Digital Data Management (Effective 1/1/2022): [https://science.osti.gov/Funding-Opportunities/Digital-Data-Management#agddm2](https://science.osti.gov/Funding-Opportunities/Digital-Data-Management#agddm2)

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# FAIR Eligibility/Teaming Requirements

▸ All applications must be submitted on behalf of a lead institution and include a single partnering team member as a subrecipient.

▸ The lead institution must be a non-R1 minority-serving institution (MSI) or an emerging research institution.

▸ The lead institution should show clear scientific leadership.

▸ The lead institution must partner with a team member in one of the following categories:

  ▸ a DOE National Laboratory

  ▸ an SC Scientific User Facility

  ▸ an R1 MSI

▸ The partner is limited to between 15 and 25% of the total funding.

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# FAIR Resources

▸ Points of contact (POCs) for all 17 DOE national laboratories and all 28 Office of Science User Facilities are posted at [https://science.osti.gov/-/media/Initiatives/pdf/FAIR_Partner_POCs.pdf](https://science.osti.gov/-/media/Initiatives/pdf/FAIR_Partner_POCs.pdf).

▸ Institution designations/classifications are posted at [https://science.osti.gov/grants/Applicant-and-Awardee-Resources/Institution-Designations](https://science.osti.gov/grants/Applicant-and-Awardee-Resources/Institution-Designations).

▸ For questions about budgets, eligibility, or similar topics, please contact [sc.fair@science.doe.gov](mailto:sc.fair@science.doe.gov).

▸ Questions regarding the specific program areas/technical requirements can be directed to the technical contacts listed within the FOA.

# FAIR Limitations

▸ Applicant institutions are limited to no more than one pre-application and one application for each PI at the applicant institution.

▸ Applicant institutions are also limited to three pre-applications and three applications for each program (ASCR, BES, BER, FES, HEP, NP, DOE IP, and ARDAP) listed in Section I.

▸ PIs must be in a permanent position at the applicant institution, whether tenured, tenure-track, or a staff appointment.

▸ Individuals in term-limited appointments, whether as adjunct, visiting faculty, fellows, or similar appointments, are not eligible to be proposed as a PI.

▸ Individuals in part-time permanent positions are eligible to be proposed as a PI.

▸ Individuals in a joint appointment are eligible to be proposed as a PI if work will be performed at the applicant institution.

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# For more information about FAIR

‣ The FOA is the authoritative source for this competition:
  - ‣ https://science.osti.gov/-/media/grants/pdf/foas/2023/SC_FOA_0002931.pdf

‣ Frequently Asked Questions (FAQs) are also available with answers to most common questions: https://science.osti.gov/Initiatives/FAIR/Frequently-Asked-Questions

‣ If you still have questions, you can contact sc.fair@science.doe.gov or the Program Managers listed under each topical area in the FOA for technical questions.

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