Quantum Computing and Information Science Faculty Fellows (QCIS-FF)

Webinar: November 8, 2018

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Directorate for Computer & Information Science & Engineering

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

Purpose of this Webinar

- Orient potential proposers
- Summarize the QCIS-FF program and review criteria
- Answer questions
- Improve the quality of proposals

Webinar Outline

- QCIS-FF program description
- Overview of solicitation (NSF 19-507)
- Questions from the community

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

NSF QCIS-FF

- Program description
- Participating organizations

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

Quantum Leap: A "Big Idea"

- "The Quantum Leap: Leading the Next Quantum Revolution": one of ten bold, long-term research "Big Ideas"
  - requires a highly-trained workforce that can advance research and development of practical solutions for quantum technologies.
- Academic faculty train the next generation of students while performing vital research.
- Computer science (CS), information science (IS), and computer engineering (CE) are at the nexus of the interdisciplinary breakthroughs needed to design advanced quantum computing, modeling, communication and sensing technologies.
- NSF recognizes inadequate research capacity in CS/CE disciplines in the realm of Quantum Computing & Information Science (QCIS).

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

QCIS-FF Program

- *The QCIS-FF program is intended to add to the existing academic workforce in quantum computing and communication.*
- As such, the program will be able to support the hires of faculty who do not currently hold tenure-track or tenured academic positions, or support faculty hired from overseas, but will not support hiring of existing faculty from eligible U.S. institutions (e.g., lateral faculty movement).
- Support departments/schools that conduct research and teaching in CS, IS, and/or CE, with the specific goal of hiring of tenure-track and tenured faculty in quantum computing and/or communication.
- Intellectual ownership and primary assignment should be with the department primarily engaged in research and teaching activities for computer and information science and engineering.

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

QCIS-FF Program Guiding Principles

- The commitment of the department, school, and university to building, growing, and sustaining a long-term interdisciplinary effort in QCIS.
- The integration of the quantum faculty with the rest of the department.
- How the new hire enhances cross-departmental research collaborations such as those across physics, mathematics, material sciences, electrical engineering, and computer and information science?
- How the new hire enables creation and support of educational programs in QCIS, including cross-disciplinary course offerings at both the undergraduate and graduate levels?

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

Participating NSF Organizations

Directorate for Computer & Information Science & Engineering (CISE)

- Division of Computing and Communication Foundations (CCF)
  - Dmitri Maslov
- Office of Advanced Cyberinfrastructure (OAC)
  - Vipin Chaudhary

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

The NSF 19-507 Solicitation

- Budget
- PI eligibility
- Proposal details
- Review criteria

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

Budget and Anticipate Funding

Total Budget per proposal: $750,000

- NSF funding will support the entire academic year salary and benefits of a single tenure-track or tenured faculty member for a duration of up to three years.

Anticipated Funding: $6,750,000

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

Schedule and Process

NSF 19-507 Important Dates

- ***Preliminary Proposal Due (REQUIRED):***
  - **December 17, 2018**
  - July 1, 2019

- ***Proposal Due:***
  - **February 25, 2019**
  - September 27, 2019

Preliminary proposals receive "encourage" or "discourage" feedback from NSF.

- Feedback is "advisory"

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

PI Eligibility

- **Proposals may only be submitted by:**
  - Universities and Colleges.
  - Department Chairs/Heads, or persons acting in such or similar capacities.

- **Limit on Number of Proposals per PI: 1**
  - An individual may participate as Principal Investigator in at most one proposal.
  - In the event that any individual exceeds this limit, any proposal submitted to this solicitation with this individual listed as PI, after the first proposal is received at NSF will be returned without review. No exceptions will be made.

- **Limit on Number of Proposals per Institution: 2**

See solicitation for details

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

QCIS-FF Preliminary Proposal

- **Elements of Preliminary Proposal**
  - **Cover sheet**
    - Proposal titles should begin with “QCIS-FF Preliminary:”.
    - Example
      - QCIS-FF Preliminary: *TheBestProjectThatShouldBeFunded*
  - **Project description (2-page Limit):**
    - Beginning of the Project Description: Project Title and Project Personnel and their departmental affiliations.
  - **Biographical sketch**

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

QCIS-FF Full Proposal

- **Cover sheet**
  - Enter the preliminary proposal number associated with this full proposal in the box "Show Related Preliminary Proposal No. If Applicable."
  - Proposal titles should begin with “QCIS-FF:”.
  - Example: QCIS-FF: *TheBestProjectThatShouldBeFunded*

- **Project Summary:** Keywords
- **Project description (15-page Limit):**
  - Describe **curriculum development activities**, in a separate section (included in these page limits) titled "Curriculum Development Activities."
  - All proposals should seek to **transcend the barriers** that separate CS/IS/CE disciplines from other scientific disciplines that pursue the study of quantum information science, and describe these efforts in a separate, clearly-identifiable section in the Project Description.
  - A clear description of the **hiring process** and the strategy to provide adequate interdisciplinary support and mentoring to the newly hired faculty should be presented.

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Supplementary Documents

- **Data Management Plan**
  - Standard NSF requirement

- **Letters of Collaboration**, if any (see details in solicitation)
  - Quantum information science is inherently interdisciplinary, and collaborations can be a useful vehicle to promote interdisciplinary interactions.

- **Project Personnel and Partner Institutions**

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Review Criteria

Reviewers and review panel will address:

- Intellectual Merit,
- Broader Impacts, and

Standard NSF Review Criteria

- QCIS-FF Specific Review Criteria

QCIS-FF Specific Review Criteria

in their reviews, panel discussions, and panel summaries

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

Standard NSF Review Criteria

When evaluating NSF proposals, reviewers will consider:

- What the proposers want to do?
- Why they want to do it?
- How they plan to do it?
- How they will know if they succeed?
- What benefits would accrue if the project is successful?

These issues apply both to the technical aspects of the proposal (intellectual merit) and the way in which the project may make broader contributions (broader impacts)

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QCIS-FF Specific Review Criteria

Additional review criteria specific to this solicitation are:

- The commitment of the department, school, and university to building, growing, and sustaining a long-term interdisciplinary effort in quantum computing and information science.
- Integration of the quantum faculty with the rest of the department.
- How the new hire enhances cross-departmental research collaborations such as those across physics, mathematics, material sciences, electrical engineering, and computer and information science?
- How the new hire enables creation and support of educational programs in QCIS, including cross-disciplinary course offerings at both undergraduate and graduate levels?

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QCIS-FF Yearly Assessment Criteria

Awards will be issued as continuing grants, with annual increments tied to yearly assessments. Approval of the yearly increments will be conditional upon (with support letter from Chair):

- The hired faculty continuing his/her full-time tenure-track or tenured employment with the institution receiving the award;
- The continued support of the institution as well as the satisfactory performance of the hired faculty in educational and research activities in QCIS and toward tenure;
- Demonstration of interdisciplinary research collaborations, by both the department as well as by the faculty supported through the award, that advance the state of QCIS research; and
- A detailed statement of contributions to QCIS over the preceding year by the faculty supported by the award. These contributions and their relevance to QCIS will be evaluated internally by NSF.

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

QCIS-FF Program Summary

- The QCIS-FF program is envisioned to accept proposals in 2018 and 2019.
- Institutions that have not received prior funding from this program will be prioritized during subsequent years of the program.
- *The QCIS-FF program is intended to add to the existing academic workforce in quantum computing and communication.*
- As such, the program will be able to support the hires of faculty who do not currently hold tenure-track or tenured academic positions, or support faculty hired from overseas, but will not support hiring of existing faculty from eligible U.S. institutions (e.g., lateral faculty movement).

Questions?

https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm

Questions and Answers (1)

- If I am the PI on a proposal to NSF 19-507:
  - Can I be the PI on any other proposal to NSF 19-507? NO
  - Can I be a co-PI on any other proposal to NSF 19-507? NO
  - Can I be Senior Personnel on any other proposal to NSF 19-507? NO

- Are co-PIs allowed on a proposal to NSF 19-507? NO

- Are Senior Personnel allowed on a proposal to NSF 19-507? NO

Only the Department Chair/Head may participate as PI, on at most one proposal for this solicitation.

In the event that any individual exceeds this limit, any proposal submitted to this solicitation with this individual listed as the PI after the first proposal is received at NSF <u>will be returned without review</u>.

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Questions and Answers (2)

- When are preproposals due?
  - ***December 17, 2018.***
  - Preproposals must be received by **5 p.m. submitter's local time**.
  - Failure to submit by 5 p.m. submitter's local time will result in the preproposal not being accepted.

  NOTE: preproposals are mandatory.
- When are proposals due?
  - ***February 25, 2019***.
  - Proposals must be received by **5 p.m. submitter's local time**.
  - Failure to submit by 5 p.m. submitter's local time will result in the proposal not being accepted.
- How do I submit a proposal to this program?
  - Please carefully read and follow the instructions provided in the solicitation itself (https://www.nsf.gov/pubs/2019/nsf19507/nsf19507.htm) and the NSF *Proposal & Award Policies & Procedures Guide (PAPPG)* available at (https://www.nsf.gov/pubs/policydocs/pappg18_1/index.jsp). If you need additional help preparing and submitting your proposal, we recommend that you contact your institution's Sponsored Projects Office.
- Do I need to use Grants.gov or Fastlane to apply?
  - Preliminary proposals: Fastlane; Full Proposals: either Grants.gov or Fastlane.

Questions and Answers (3)

- ***What types of organizations organizations are allowed to submit proposals?***
  - ***Universities and Colleges*** - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in, the US acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.

- ***What are the restrictions on the budget?***
  - NSF funding will support the entire academic year salary and benefits of a single tenure-track or tenured faculty member for a duration of up to three years.
  - The total request per position cannot exceed $750,000.
  - The following are examples of budget lines that are not allowed: postdoctoral scholars, graduate students, undergraduate students, secretarial support, equipment, travel, other direct costs (materials and supplies, publication costs, consultant services, computer services, subawards), startup package.

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On behalf of the National Science Foundation and the QCIS-FF team

THANK YOU!

Questions?

- Now
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These slides, an audio recording, and a script of this webinar are available at https://www.nsf.gov/events/event_summ.jsp?cntn_id=297130&org=CISE and the program webpage