

**Opportunity Title:** Design of Superconducting Digital Electronics

**Opportunity Reference Code:** ICPD-2025-40

**Organization** Office of the Director of National Intelligence (ODNI)

**Reference Code** ICPD-2025-40

**How to Apply** **Create and release your Profile on Zintellect** – Postdoctoral applicants must create an account and complete a profile in the on-line application system. **Please note: your resume/CV may not exceed 3 pages.**

**Complete your application** – Enter the rest of the information required for the IC Postdoc Program Research Opportunity. The application itself contains detailed instructions for each one of these components: availability, citizenship, transcripts, dissertation abstract, publication and presentation plan, and information about your Research Advisor co-applicant.

Additional information about the IC Postdoctoral Research Fellowship Program is available on the program website located at: <https://orise.orau.gov/icpostdoc/index.html>.

If you have questions, send an email to [ICPostdoc@orau.org](mailto:ICPostdoc@orau.org). Please include the reference code for this opportunity in your email.

**Application Deadline** 2/28/2025 6:00:00 PM Eastern Time Zone

**Description** **Research Topic Description, including Problem Statement:**

Superconducting electronics has been pursued for potential reduction in compute power and faster clock speeds. Recent advances in electronic design automation (EDA) for superconducting circuits have greatly improved the available design capabilities. Under this opportunity, a postdoctoral scholar would pursue novel design of superconducting circuits, exploring ideas in implementing novel components and/or logic for CPU-based computing, which may enable ideas in specialized hardware accelerators or niche applications

**Example Approaches:**

Application of electronic design tools for:

1. New digital logic families with advantages w.r.t. state-of-the-art
2. Designs incorporating novel components demonstrating new capabilities
3. Development of devices illustrating advantages of superconducting electronics for accelerators or niche applications

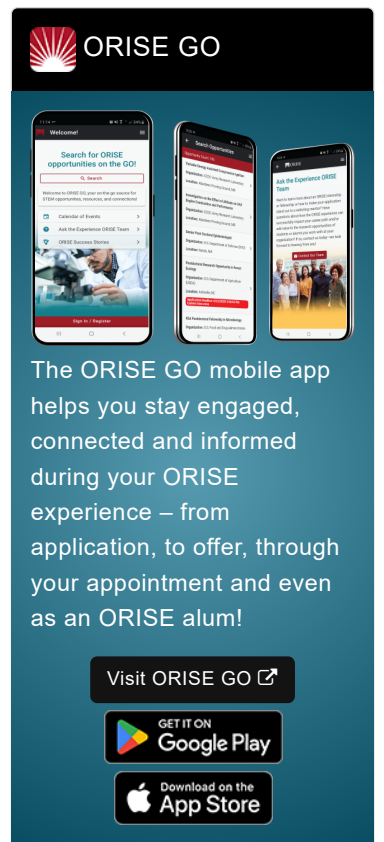
**Relevance to the Intelligence Community:**

High Performance Computing

**Key Words:** SFQ, RSFQ, Single flux Quantum, superconducting digital logic, EDA


**Qualifications** **Postdoc Eligibility**


- U.S. citizens only
- Ph.D. in a relevant field must be completed before beginning the appointment and within five years of the appointment start date
- Proposal must be associated with an accredited U.S. university, college, or U.S. government




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laboratory

- Eligible candidates may only receive one award from the IC Postdoctoral Research Fellowship Program

**Research Advisor Eligibility**

- Must be an employee of an accredited U.S. university, college or U.S. government laboratory
- Are not required to be U.S. citizens

**Point of Contact** [Keri Tarwater](#)

**Eligibility** • **Citizenship:** U.S. Citizen Only

**Requirements** • **Degree:** Doctoral Degree.

• **Discipline(s):**

- **Chemistry and Materials Sciences** ([12](#))
- **Communications and Graphics Design** ([3](#))
- **Computer, Information, and Data Sciences** ([17](#))
- **Earth and Geosciences** ([21](#))
- **Engineering** ([27](#))
- **Environmental and Marine Sciences** ([14](#))
- **Life Health and Medical Sciences** ([45](#))
- **Mathematics and Statistics** ([11](#))
- **Other Non-Science & Engineering** ([2](#))
- **Physics** ([16](#))
- **Science & Engineering-related** ([1](#))
- **Social and Behavioral Sciences** ([30](#))