

Opportunity Title: Material Defects in Superconducting and Spin Quantum Computing
Opportunity Reference Code: ICPD-2025-37

Organization Office of the Director of National Intelligence (ODNI)

Reference Code ICPD-2025-37

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. 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:**

Material defects in solid state qubits (such as superconducting qubit and electron or hole spin quantum dots) often can severely limit the performance of multi-qubit devices. Such defects can give rise to energy loss and unstable operation. Their presence complicates system calibration/tune-up and can give rise to a frequent need for re-calibration. This topic seeks to study these so-called two-level-system defects and fluctuators, and to develop potential mitigation strategies.

Example Approaches:

Example topics of interest in defects in solid-state qubits includes:

1. Theoretical study or experimental identification of material sources of defects
2. Mitigation through optimized material growth and/or treatments
3. A study of the time dynamics of defect evolution either naturally or under stimulus
4. Study of novel calibration routines to account for defect dynamics

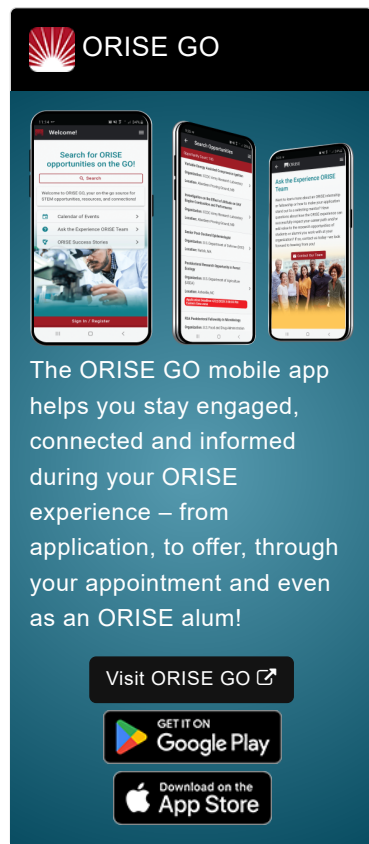
Relevance to the Intelligence Community:

Quantum Computing

Key Words: Quantum Computing, Noise, Qubits, Two-level-system, superconducting qubits, quantum dots

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



ORISE GO

The ORISE GO mobile app helps you stay engaged, connected and informed during your ORISE experience – from application, to offer, through your appointment and even as an ORISE alum!

Visit ORISE GO

GET IT ON Google Play

Download on the App Store

Opportunity Title: Material Defects in Superconducting and Spin Quantum

Computing

Opportunity Reference Code: ICPD-2025-37

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 | <ul style="list-style-type: none">• Citizenship: U.S. Citizen Only |
| Requirements | <ul style="list-style-type: none">• Degree: Doctoral Degree.• Discipline(s):<ul style="list-style-type: none">◦ 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 👁) |