

Opportunity Title: Orbit Determination by Optimizing the Integration of Object Observation and Propagation

Opportunity Reference Code: ICPD-2025-56

Organization Office of the Director of National Intelligence (ODNI)

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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:**

This research seeks an innovative approach to orbit determination of space objects. The goal is to balance observation frequency and propagation accuracy with the constraint of computing power.

Example Approaches:

This reference compared five techniques, specifically Least Squares, Extended Kalman Filter, Unscented Kalman Filter and Ensemble Kalman Filter, and Bootstrap Particle Filter. Ramanathan, T. V. and R. A. Chipade. (2021) "Comparative Evaluation of Statistical Orbit Determination Algorithms for Short-Term Prediction of Geostationary and Geosynchronous Satellite Orbits in NavIC Constellation."

Linkage to current DNI's S&T Priorities:

Develop/enhance capabilities to advance space situational awareness

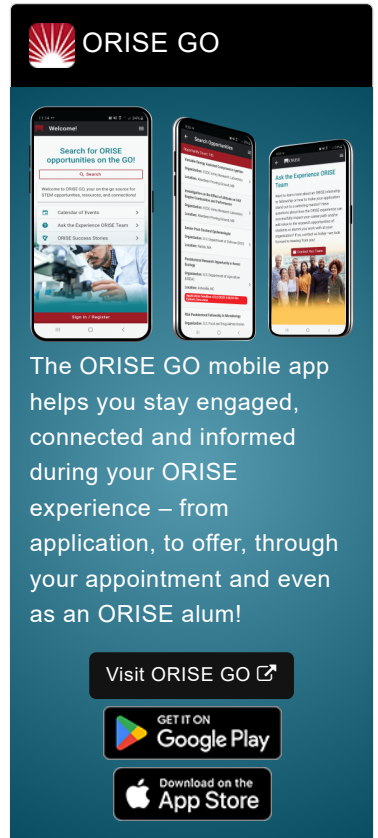
Key Words: Orbit determination, space object observation, orbit propagation, optimization, Kalman filters.

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 Program


Research Advisor Eligibility


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- 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](#))