

**Opportunity Title:** Advanced Phenomenologies for Remote Sensing

**Opportunity Reference Code:** ICPD-2020-18



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

**Reference Code** ICPD-2020-18

### 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 2 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** 2/28/2020 6:00:00 PM Eastern Time Zone

### Description

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

Current space-based Earth monitoring is built around technology that is decades to centuries old (e.g., electro-optical imaging – Hans Lippershey, 1608; RADAR – Christian Hulsmeyer, 1904; LIDAR – Malcolm Stitch, 1961; spectral imaging – Landsat 1, 1972). Arguably, the majority of current R&D is aimed at evolutionary advances of those technologies. However, limited efforts are aimed at developing new detecting technologies capable of revolutionizing remote sensing. New technologies able to go beyond the inherent physical limitations of current remote sensing methods are needed to observe the planet in new and more revealing ways.

Technologies could include: (a) the remote sensing of potential fields (e.g., gravity, magnetism); (b) long-distance observation of radioactivity; (c) all-weather imaging; and (d) the imaging of concealed objects, are of interest.

#### Example Approaches:

Wood, A., Lilette, E., Fein, Y., Tomek, N., McGuinness, L., Hollenberg, L., Scholten, R. and Martin, A. (2018). Quantum measurement of a rapidly rotating spin qubit in diamond. *Science Advances*, 4(5), p.eaar7691.

#### Relevance to the Intelligence Community:

The purpose of this research would be to advance the Intelligence Community's capabilities by exploring sensing approaches not yet thought of and by exploring what could be developed.

**Key Words:** Remote Sensing, Quantum Sensing, Potential Fields, Gravity, Magnetism, Radioactivity

### 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 application deadline
- 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

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

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**Eligibility  
Requirements**

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 )
  - **Communications and Graphics Design** (2 )
  - **Computer, Information, and Data Sciences** (16 )
  - **Earth and Geosciences** (21 )
  - **Engineering** (27 )
  - **Environmental and Marine Sciences** (14 )
  - **Life Health and Medical Sciences** (45 )
  - **Mathematics and Statistics** (10 )
  - **Other Non-Science & Engineering** (2 )
  - **Physics** (16 )
  - **Science & Engineering-related** (1 )
  - **Social and Behavioral Sciences** (27 )