

Opportunity Title: Autonomous, On-Board, Position Determination of Earth-Orbiting Spacecraft
Opportunity Reference Code: IC-16-29

Organization Office of the Director of National Intelligence (ODNI)

Reference Code IC-16-29

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.

Application Deadline 4/15/2016 6:00:00 PM Eastern Time Zone

Description This research explores approaches for earth-orbiting spacecraft to determine their position (ephemeris) in an autonomous way using only on-board sensors and processing. Approaches cannot rely on man-made reference emitters external to the spacecraft. A wide variety of possible approaches exist and, in collaboration with the sponsor, the Postdoc could investigate approaches judged to be particularly promising. It is anticipated that this will be mostly theoretical and modeling work with the desired result of an exploration of approaches and innovative options.

Example Approaches


Research can take many forms, including a multi-phase approach to narrow which approaches are most promising and then pursuing those in more detail.

Areas that can be explored can include, but are not limited to:


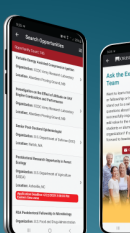

- Imaging of astronomical bodies (sun, moon, Earth, stars)
- Imaging of the Earth
- Sensing of space environment (electromagnetic field, radiation)
- Sensing of non-man made emitters
- Laser ranging
- Use of orbital mechanics to constrain possible tracks. For example, build up a catalogue of possible positions over time and use assumption of free fall to help fit to a possible orbit.

- Eligibility Requirements**
- **Citizenship:** U.S. Citizen Only
 - **Degree:** Doctoral Degree.
 - **Discipline(s):**
 - **Business** ([11](#) 👁)
 - **Chemistry and Materials Sciences** ([12](#) 👁)
 - **Communications and Graphics Design** ([6](#) 👁)
 - **Computer, Information, and Data Sciences** ([16](#) 👁)
 - **Earth and Geosciences** ([21](#) 👁)
 - **Engineering** ([27](#) 👁)







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- **Environmental and Marine Sciences** ([14](#) )
- **Life Health and Medical Sciences** ([45](#) )
- **Mathematics and Statistics** ([10](#) )
- **Other Non-Science & Engineering** ([13](#) )
- **Physics** ([16](#) )
- **Science & Engineering-related** ([1](#) )
- **Social and Behavioral Sciences** ([28](#) )